

Building a  
healthier future

# Cell & Gene Therapy



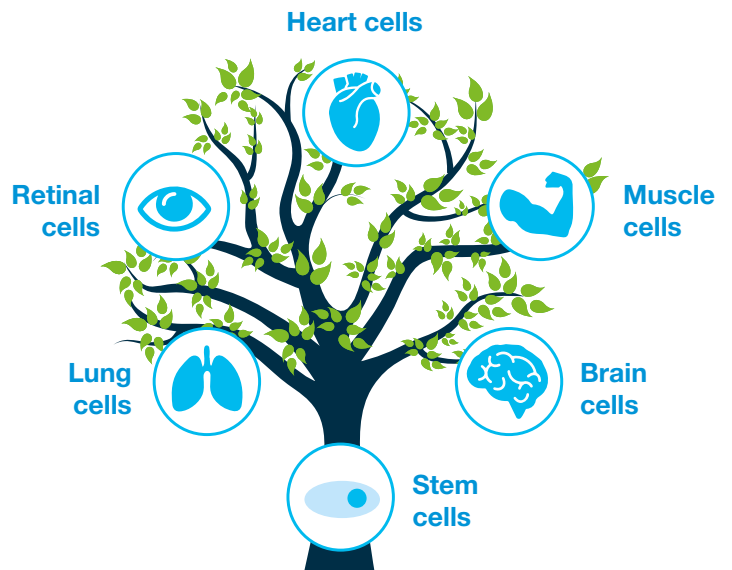
## Cell Therapy

### What is cell therapy?

All specialized cells in our body, such as brain or heart cells, begin as tiny, blank canvases full of potential and possibilities - stem cells that change and mature to take on their own distinct form and function.

Many diseases are caused by malfunctioning or damaged cells. What if, instead of treating disease symptoms, doctors could restore function and health by replacing cells that were lost or damaged by disease?

In short, cell therapy is the use of living cells to treat diseases: engineered and cultivated cells are transferred to the patient in order to replace or repair damaged cells or to transfer repurposed cells to enhance their function. This is rather complex and can be performed in two different ways:

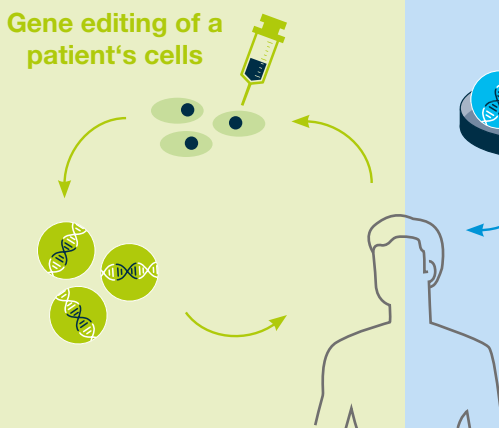


The human body is made up of around 200 different types of cells, each specialized to carry out a particular role.



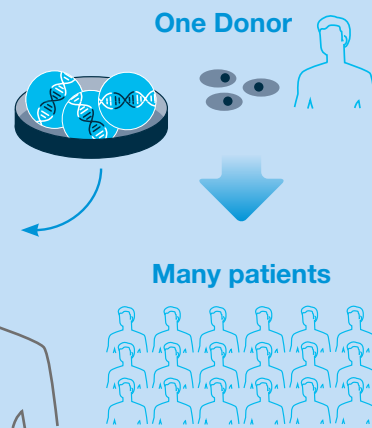
### Autologous cell therapy:

transplanted cells come from the patients themselves. This therapy limits the concern for transplant rejection, which is a benefit for recipients. However, creating large batches with controlled quality poses a challenge.



### Allogeneic cell therapy:

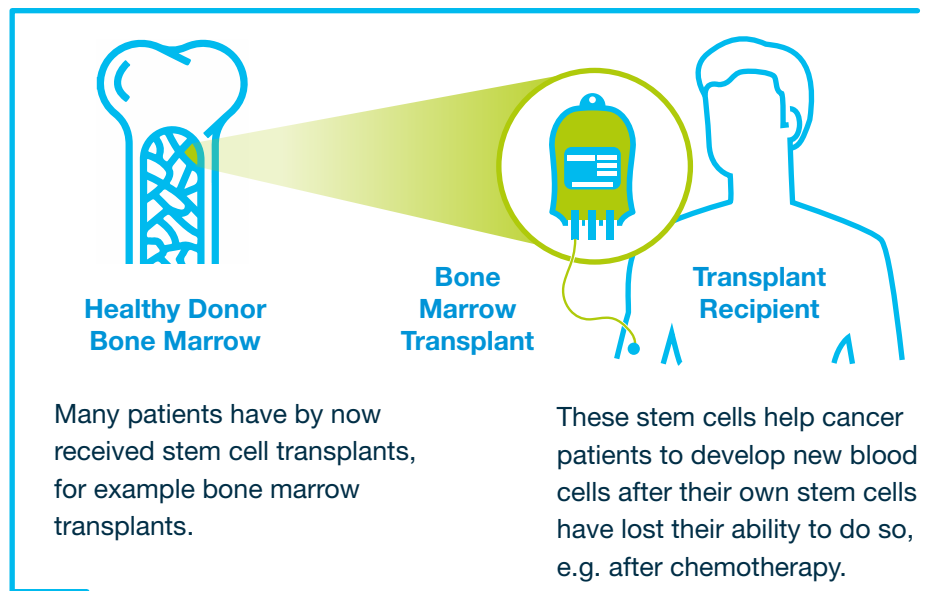
transplanted cells come from a donor, who is a person other than the recipient of the cells. This is promising because donor-based therapies can form the basis of "off the shelf" products.



Replace degenerated cells or repurpose cells

## Cell therapy success stories

First-generation cell therapies are already positively impacting the lives of patients around the world. Using advanced technologies allows for the development of therapies for blood disorders, including some types of leukemia and lymphoma. In fact, there are already several approved oncological cell therapies that are currently used to treat patients.



Did you know that bone marrow transplants are one of the most established examples of cell therapy used to effectively treat diseases? In fact, more than 50,000 allogeneic transplants take place each year worldwide!<sup>1</sup>



**2019** We ventured into iPSC (induced pluripotent stem cell) derived cell therapy, acquiring BlueRock Therapeutics, a company founded in 2016 by Leaps by Bayer.



## Bayer's commitment to advancing cell therapy

Our researchers are already working on the next wave of innovation in cell therapy. By leveraging BlueRock's cell know-how and expertise in gene editing technologies, we can even engineer our cells. Imagine this like enhancing your smartphone by adding apps. This is what makes cell therapy so powerful. It has the potential to generate durable and strong therapeutic effects in patients, raising the standard of care and enabling therapies for diseases we once thought were untreatable.

## Making cell therapy a reality for patients in need

Cell therapies have the potential to be one-time treatments with lasting results, whereas conventional medicines often need to be taken continuously for months, years, or even for life. Together with BlueRock we are committed to exploring the potential of cell therapy in areas like neuro-degenerative diseases, cardiac disease, and ocular diseases. We want to change the landscape of modern medicine with the help of cell therapy.



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<sup>1</sup> Aljurf M., Weisdorf, D., Alfraih, F. et al., Bone Marrow Transplant 2019; 54: 1179-1188.