

Building a  
healthier future

# Cell & Gene Therapy



## Bayer's strategy

### We are on the cusp of a new wave of innovation in healthcare

For decades, many diseases have been labeled as “intractable”, meaning medicine could not provide an answer for patients beyond addressing their symptoms to a certain extent. By targeting diseases at the cellular or genetic level, we have the potential to shift from treating symptoms to stopping or even reversing diseases.



Heart failure, neurodegenerative diseases like **Parkinson's**, or genetic diseases like **Huntington's** are just a few examples of where **cell and gene therapies** may make a **difference** in the lives of patients.

### A pharmaceutical (r)evolution: cell therapy and gene therapy

Bayer's journey began over 125 years ago with small molecule pharmaceuticals like Aspirin™. Large molecules and targeted therapies like Eylea™ for age-related macular degeneration came next. These treatments opened new doors and improved the lives of millions of patients.

Researchers are already working on the next wave of innovation: cell therapy and gene therapy. These could be a breakthrough for patients living with diseases for which limited or no options are available today.

Three waves of  
innovation in the  
pharmaceuticals  
space:

① Our stronghold  
**Small molecules**

② Our biologics  
**Large molecules &  
targeted therapies**

③ Our next step  
**Cell & Gene  
Therapy**



**POTENTIAL  
TO REVERSE  
DISEASE**

**MOSTLY SYMPTOMATIC  
TREATMENT, UNDERLYING  
DISEASE NOT REVERSED**



Between 2019 and 2023, Bayer has invested more than **€ 3.5 billion** in the build-up of a **cell and gene therapy platform**. This includes the acquisition of **BlueRock and AskBio**, as well as a collaboration with **Mammoth Biosciences**.

## Pioneering scientific advancement

We believe that a healthier future can be achieved by leveraging science, passion and collaboration. We are combining our internal expertise with external collaborations and acquisitions, jointly advancing the potential of the next wave of innovation in the pharmaceuticals space for the ultimate benefit of patients.



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



**2020** We joined forces with Asklepios BioPharmaceutical (AskBio), a gene therapy leader with a rich pipeline and manufacturing capabilities.



**2022** We entered into a collaboration with Mammoth Biosciences, building gene editing capabilities to enable next-generation cell therapies, gene therapies and drive standalone therapeutic applications.



Did you know that there are already multiple approved **cell therapies and gene therapies** for the treatment of various types of cancer, certain blood disorders like hemophilia A and B, as well as other rare diseases such as spinal muscular atrophy?<sup>1,2</sup>

## We are shifting treatment paradigms...

First-generation cell and gene therapies are already impacting the lives of patients around the world. The future is enormously exciting – cell therapy and gene therapy could lead to far more targeted, personalized treatments. It could also mean finding a way to finally defeat diseases that we once thought untreatable.

### ... across multiple areas



**Heart Failure**



**Degenerative Diseases**

(like Parkinson's disease or some retinal disorders)



**Genetic Diseases**

(such as Huntington's disease or Limb-Girdle muscular dystrophy)

Bayer AG  
Pharmaceuticals  
Cell & Gene Therapy  
Muellerstrasse 178,  
13353 Berlin, Germany

1 Source: American Society of Gene and Cell Therapy, and Citeline. Gene, Cell, & RNA Therapy Landscape: Q3 2022 Quarterly Data Report, <https://asgct.org/global/documents/asgct-citeline-q3-2022-report.aspx>. Accessed Dec. 2022.

2 Source: OCT) JX Yu et al., Nature vol 19, September 2020; AAV) Cortellis; GE) Cortellis; iPSC) JY Kim et al., Stem cell reviews and reports, Springer, September 2021