

Genetic therapies

Longer Term Investments (LTI)

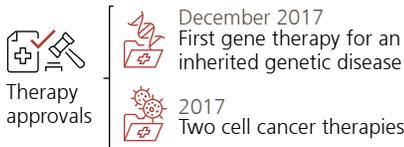
Genetic therapies modify genetic information with the intent of curing disease. Replacing defective DNA can remove the cause of an illness and restore health. The technology represents a paradigm shift in medical care compared to traditional drug treatment, which usually just slows disease progression or relieves symptoms.



Projections and opportunities

Approved therapies

The first gene therapy for an inherited genetic disease received US approval in Dec 2017. Two cell therapies for cancer were also approved in 2017.



Source: UBS

Cell and gene acquisition interest

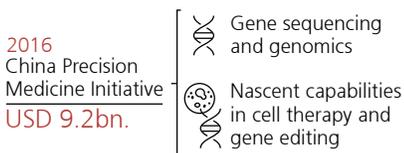
Big pharma and biotech companies have spent USD 35bn acquiring cell and gene therapy companies since 2017.



Source: UBS estimates

China

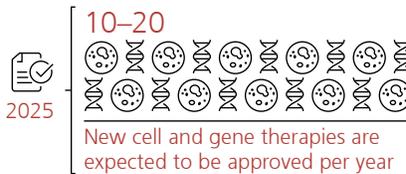
China's USD 9.2bn China Precision Medicine Initiative was launched in 2016, initially focusing on gene sequencing and genomics. It has evolved into nascent capabilities in cell therapy and gene editing. One third of global CAR-T trials were being conducted in China in 2018.



Source: Goldman Sachs, UBS

Positive regulatory outlook

The US FDA has stated it expects to approve 10-20 new cell and gene therapies per year by 2025.



Source: FDA

High-Up-front costs

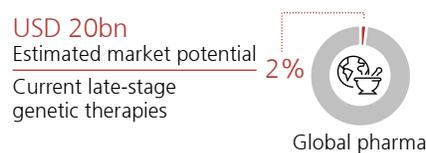
Genetic therapies involve high up-front costs. For the three approved genetic therapies: Luxturna USD 825,000, Yescarta USD 373,000, Kymriah USD 475,000.



Source: Company data, UBS

Market potential

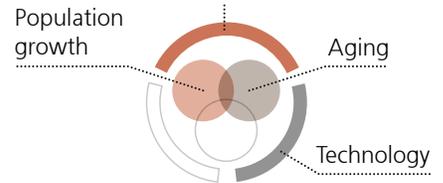
Estimated market potential of current late-stage genetic therapies pipeline: USD 20bn. This is around 2% of global pharma industry sales.



Source: Bernstein Research, UBS



Genetic Therapies properties



○ Influencer ○ Key drivers



Near-term drivers

- New clinical data expanding genetic therapies pipeline
- Commercial progress including reimbursement
- Large pharma investment



Sustainable investing impact

- Gene therapy manufacturers
- Biotech companies



Impact investing (UN SDGs)

- SDG 3: Good health and well-being



