Cell and Gene Therapy: a New Era of Medicine[1]

Cell and gene therapies could help reduce or eliminate the need for treatments that have to be taken continuously, often for life[2,3]

Novartis is reimagining medicine with one-time, transformative cell and gene therapies that only need to be administered once for patients with serious, rare, and life-threatening diseases. These therapies present an opportunity to reexamine how our healthcare system manages diagnosis, treatment, care, and associated costs for these patients.[1,3-5]

Conventional Therapy

Uses molecules, peptides, proteins
Treatment contains a small (most drugs) or large (biologics) molecule that mimics or disrupts processes associated with a condition or disease[6,7]

Chronic therapy
Many conventional treatments must be taken by pill, injection, or infusion on a continual basis, and the effects of treatment may not continue once the medication is stopped[6-8]

Manages or treats symptoms long term
Usually relieves the signs and symptoms of disease[8]

Cell and Gene Therapy

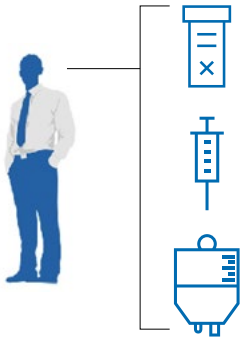
Uses DNA, RNA, cells
Reprograms the body to directly treat disease[3,10]

One-time treatment
Effect of treatment may be lasting after a single administration[3]

Long-term effects
Potential to transform medicine, halting the progress of a disease or alleviating the underlying cause of a disease[3]

Delivered in vivo

Traditional medicines are ingested, injected, or infused, and take action within the body[6,7]



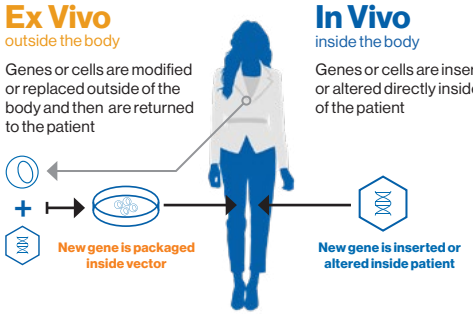
Delivered ex vivo or in vivo[3]

Ex Vivo
outside the body

Genes or cells are modified or replaced outside of the body and then are returned to the patient

In Vivo
inside the body

Genes or cells are inserted or altered directly inside of the patient



Similar for all

Uniform treatment designed to benefit larger groups of patients, targeting common disease processes or specific disease pathways[6,9]

Uses broader knowledge about diseases to treat many patients[6,9]

Genetically focused

Designed to treat each patient at the genetic level[3]

Uses information about a patient's cells and genes, along with the individual characteristics of their disease[3]

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