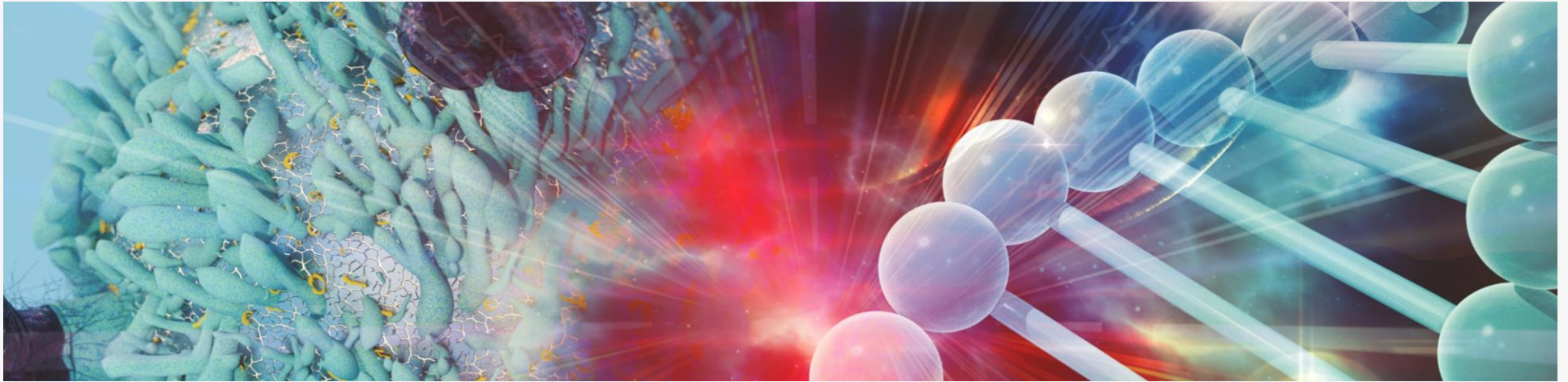


Market Briefing

# Powering Precision Medicine: Trends Shaping the CGT Market

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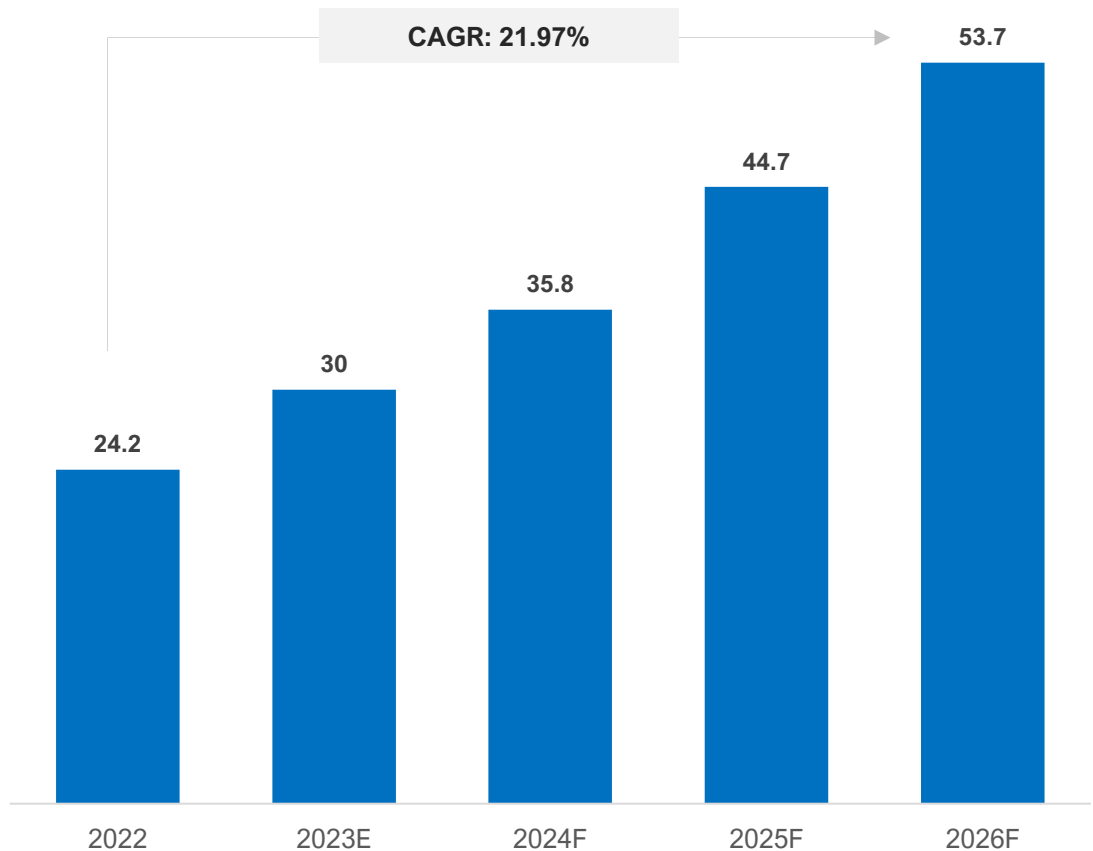
## Strategic Insights into the Global CGT Landscape

# Global Market Landscape: Cell and Gene Therapy

The global Cell and Gene Therapy (CGT) market is projected to grow at ~22% CAGR, reaching USD 53.7 Bn by 2026, driven by rising adoption, regulatory support, and strategic collaborations across therapeutic areas

## Global Cell and Gene Therapy Market Size

2022-26 | Values in USD Bn



- Market experiencing ~22% year-over-year increase in revenue
- Market witnessing increased adoption of CGT to treat a wide range of diseases, including oncology, rare genetic disorders, and chronic diseases
- Surge in strategic collaborations and acquisitions also observed within the space
- FDA's RMAT designation & EMA's PRIME program provide accelerated regulatory pathways for promising CGT candidates

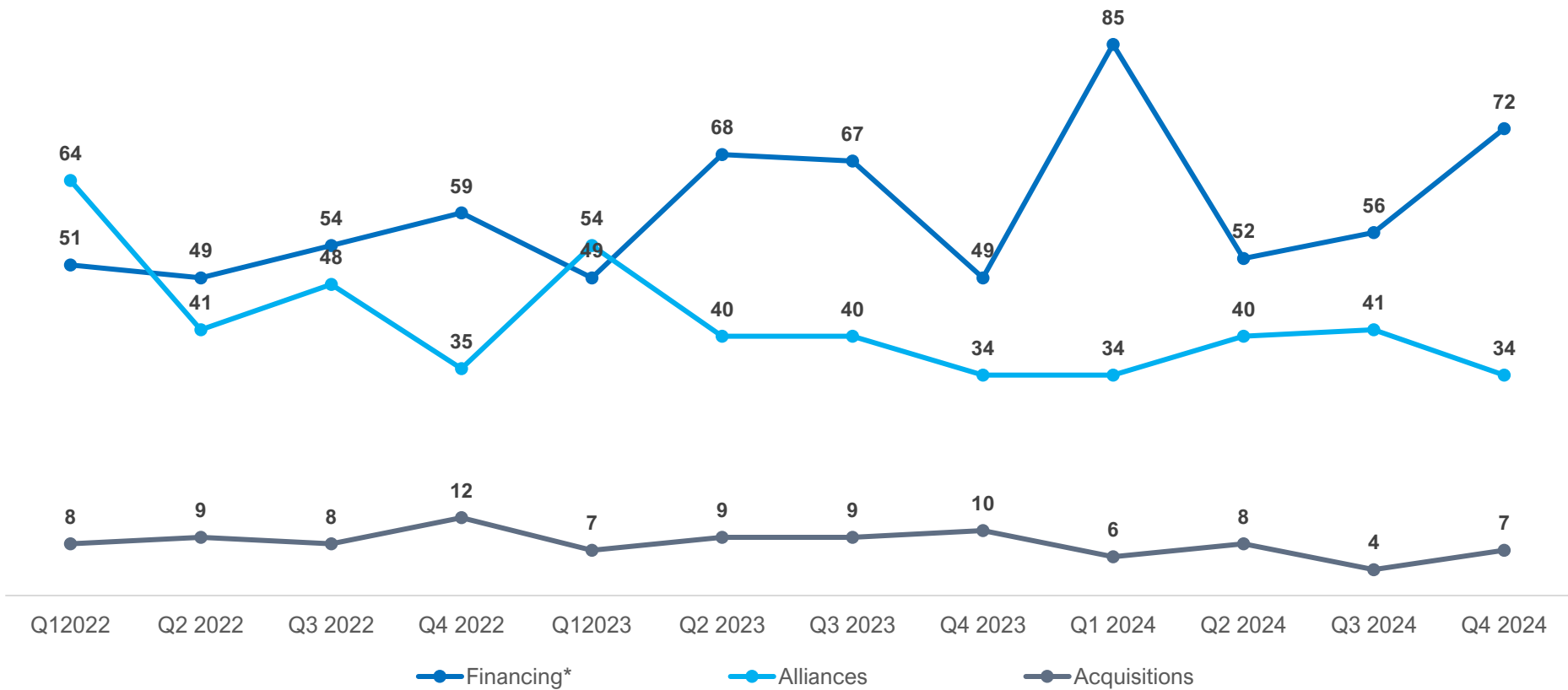
Source: Cell and Gene Therapy on the Ascent – CRISIL, Evaluate Pharma, American Society of Cell and Gene Therapy, CiteLine

# Deals Landscape in the CGT Space

The CGT space witnessed robust deal activity from 2022 to 2024 with financing rounds peaking in Q1 2024 while alliance deals remained steady across quarters and acquisitions continued at a lower but stable pace

## Total Number of Deals – By type

2022-24



\*Financings include public financings (IPOs and follow-ons) plus privately raised funding through venture rounds, debt offerings, or private investment in public equity

Source: American Society of Cell and Gene Therapy (Q1 2023, Q4 2023, Q4 2024 reports)

## Acquisitions in the CGT Space

Between 2024 & 2025, AstraZeneca, Roche, & Novartis made major CGT acquisitions to expand portfolios in CAR-T & gene therapies, with deal values reaching up to \$1.1 billion – targeting oncology & neuromuscular diseases

### Significant Acquisitions in the CGT Space

2022-24



**Year: March 2025**

- AstraZeneca agreed to acquire Belgium-based Esobiotech, a biotech company developing in vivo CAR-T cell therapies
- The acquisition includes an initial payment of \$425 million, with up to \$575 million in milestone-based payments



**Year: November 2024**

- Roche announced acquisition of Poseida Therapeutics, a U.S.-based company specializing in allogeneic CAR-T cell therapies
- This acquisition aims to bolster Roche's portfolio in immune cell therapies, particularly for blood cancers



**Year: November 2024**

- Novartis announced the acquisition of Kate Therapeutics in a deal worth up to \$1.1 billion
- The acquisition is aimed at strengthening Novartis's gene therapy pipeline, particularly in the area of inherited neuromuscular diseases

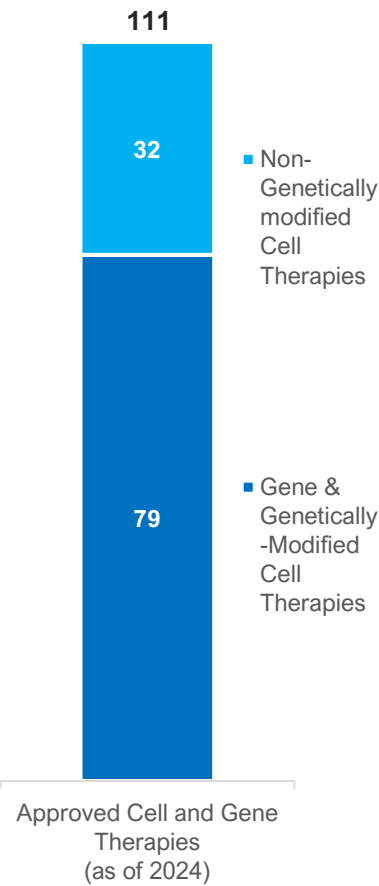
**Source:** American Society of Cell and Gene Therapy (Q1 2023, Q4 2023, Q4 2024 reports)

# Global Cell and Gene Therapy Approvals

As of 2024, 111 CGTs have been approved globally, primarily for oncology & rare diseases, with North America accounting for over 65% of approvals, followed by Europe and Asia-Pacific

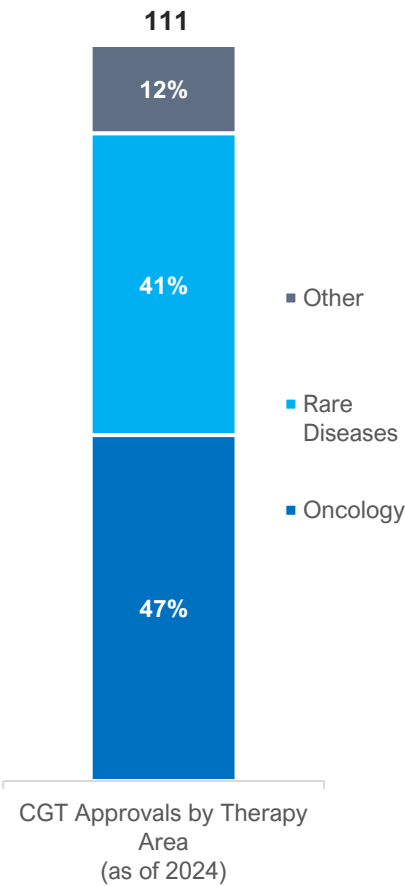
Number of Approved CGTs

As of 2024



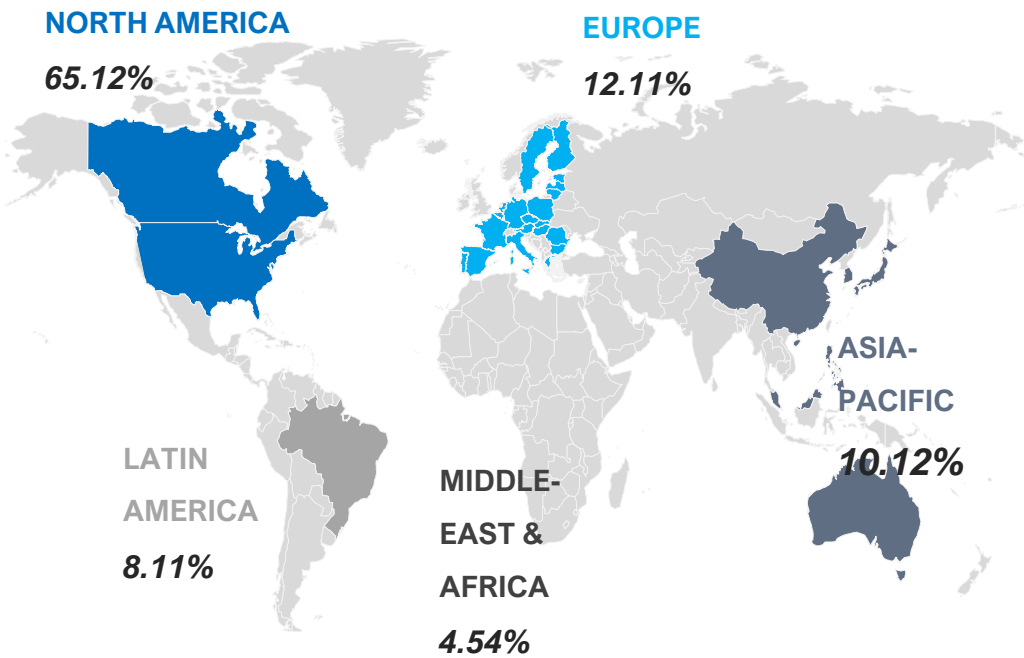
Therapy Areas of Approval

As of 2024



Number of Approvals by Region

2024 | Figures in %



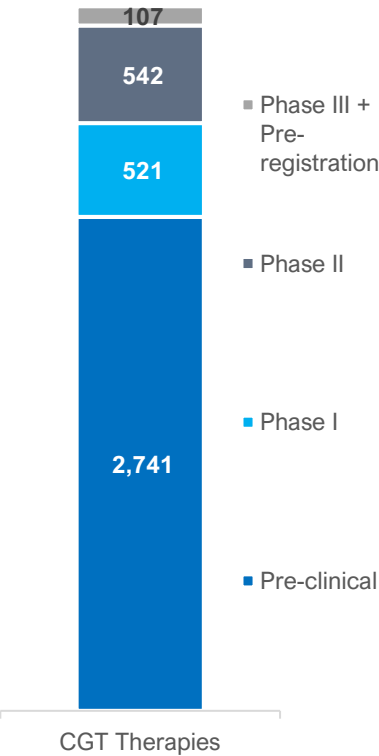
Source: Cell and Gene Therapy on the Ascent – CRISIL, Evaluate Pharma, American Society of Cell and Gene Therapy, CiteLine

# Global Cell and Gene Therapy Pipeline Landscape

Over 3,900 CGT candidates are in development with ~70% in early stages and ~60% focused on cancer while North America and Asia-Pacific together account for ~65% of global pipeline activity

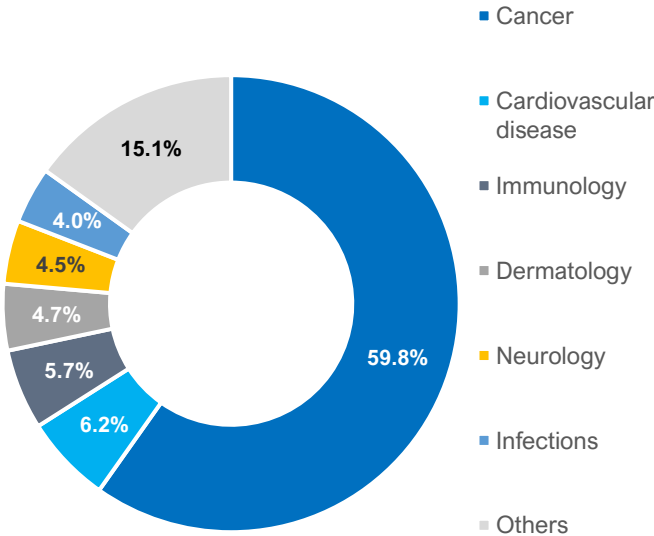
Global CGT Pipeline

As of H1 2024



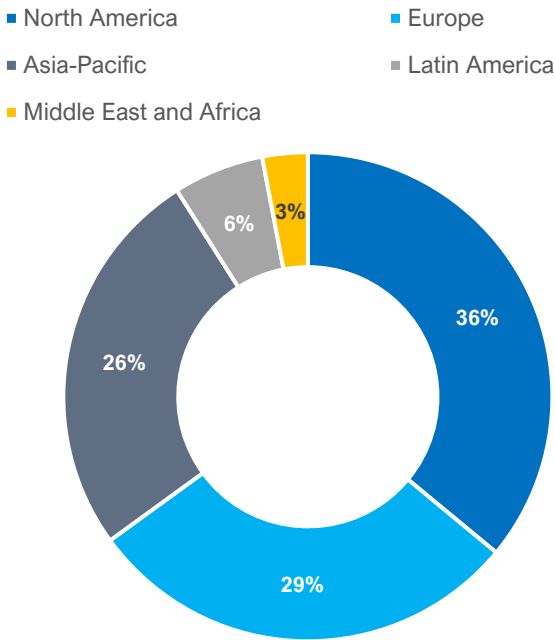
Pipeline by Therapy Areas

As of H1 2024



Pipeline by Geography

As of H1 2024



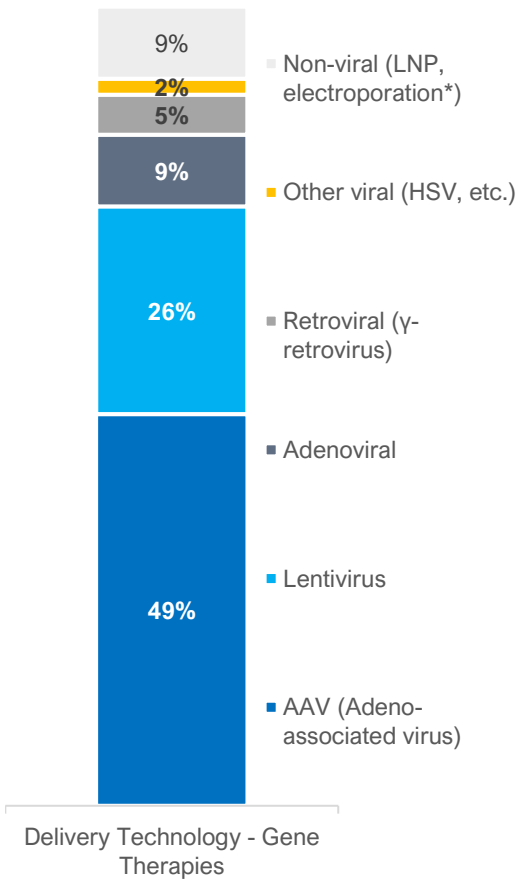
Source: Cell and Gene Therapy on the Ascent – CRISIL, American Society of Cell and Gene Therapy, CiteLine, News Release,

# Technologies in Pipeline Programs of Cell and Gene Therapy

Lentivirus & AAV are the leading gene therapy delivery technologies while CAR-T dominates GM cell therapies; hematopoietic & mesenchymal stem cells are the most used types in non-GM cell therapy programs

Delivery Technologies in GT\*\*

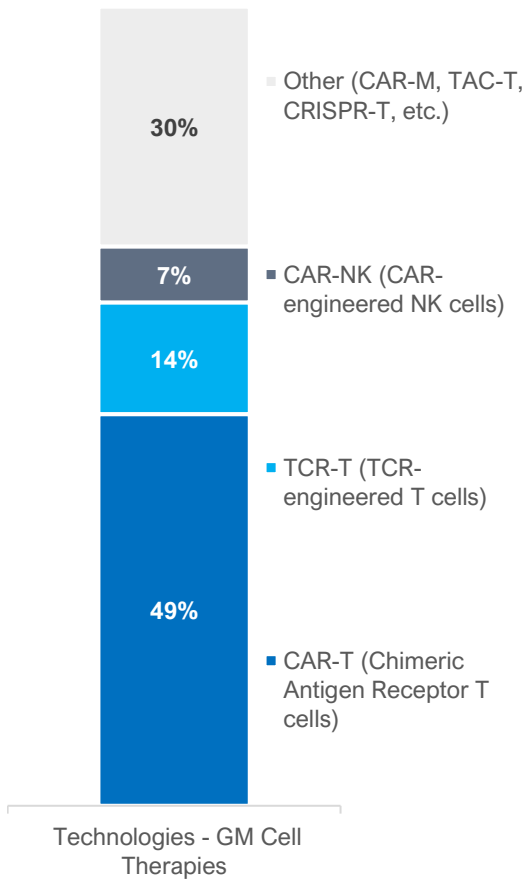
2024



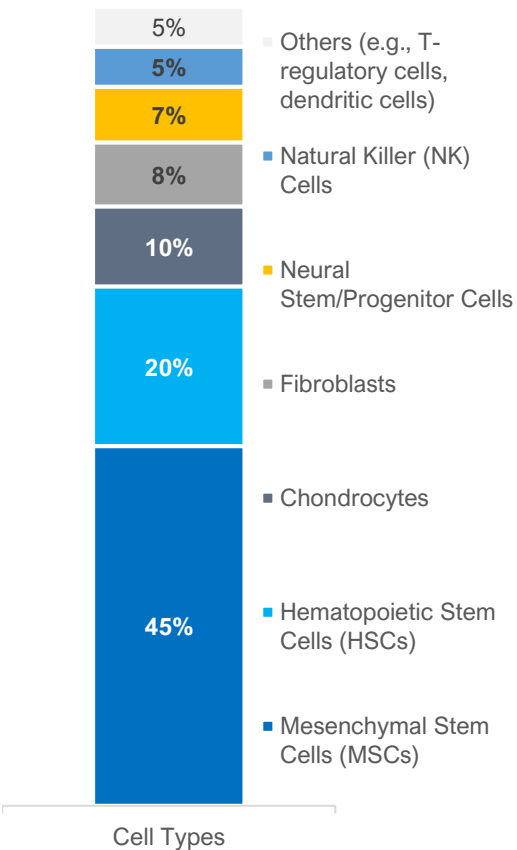
Technologies in Cell Therapy Programs

2024

Technologies in GM\* Cell Therapies



Cell Types used in non-GM Cell Therapies



Source: American Society of Cell and Gene Therapy, CiteLine, News Releases

## Examples of Technological Innovations

Companies are innovating across non-viral delivery, gene, & cell therapies through electroporation, mRNA platforms, gene-agnostic approaches, & engineered therapies to enhance safety, efficacy, & accessibility across disease areas

### Examples of Tech Innovations by CGT Companies

#### Non-Viral Delivery Methods

##### MaxCyte's Flow Electroporation® Technology

- Platform enables efficient delivery of molecules like nucleic acids and gene-editing tools into cells
- Supports both ex- and in-vivo applications
- Agnostic to cell type & gene manipulation technology, making it versatile for various therapeutic approaches

##### mRNA and LNP Delivery Technology

- **Abnova's** nanoCAR-T mRNA service uses mRNA vectors instead of traditional lentiviral vectors
- Enhanced CAR-T cell expression, persistence, & therapeutic efficacy – making it scalable and cost-effective

#### Gene Therapy Innovations

##### Modifier Gene Therapy Platform

- **Ocugen's** platform uses nuclear hormone receptors (NHRs)
- Aim to address retinal diseases like dry AMD and Stargardt disease, offering a gene-agnostic approach

#### Cell Therapy Innovations

##### Allogeneic CAR-T Therapies

- **CARsgen's** THANK-uCAR® platform developing allogeneic CAR T-cell products,
- Aim to address challenges like NKG2A expression levels, improving therapeutic efficacy for multiple myeloma

##### Next-Generation TIL Cell Therapy

- **Iovance Biotherapeutics** advancing TIL (tumor-infiltrating lymphocyte) cell therapies with genetic modifications, such as PD-1 inactivation
- Aim to enhance efficacy in solid tumors

**Source:** American Society of Cell and Gene Therapy, CiteLine, News Releases

## Emergence of Digital Intervention and Artificial Intelligence

AI & digital tools are transforming CGT manufacturing by improving efficiency, scalability, & quality through innovations like AI-engineered proteins, robotics, & ML with companies like Bio-Techne & OmniaBio leading the integration

### Artificial Intelligence (AI) and Digital Integration in CGT Manufacturing

- AI and digital tools are being increasingly integrated into cell and gene therapy (CGT) to enhance R&D efficiency, manufacturing scalability, and product consistency.
- Technologies such as AI-driven protein and AAV capsid design, machine learning (ML) for process optimization, closed-system automation, and real-time biosensor analytics are streamlining development workflows.
- Companies like Bio-Techne, and OmniaBio are using these tools to improve safety, reduce costs, and accelerate time-to-market. These innovations are helping overcome traditional CGT bottlenecks in quality control, scalability, and regulatory compliance.

#### biotechne

- Expanded R&D Systems portfolio to include **AI-engineered designer proteins**, (e.g., IL-2 Heat Stable Agonist, Activin A Hyperactive, etc.)
- These designed using generative AI trained on extensive proteomic data – enhanced stability, receptor affinity, & performance in cell culture applications
- Its ProPak™ GMP cytokines provided in **dose-optimized, single-use bags with weldable tubing**
- Facilitate closed-system manufacturing for cell therapies – minimizes contamination risks and supports scalable, efficient production processes

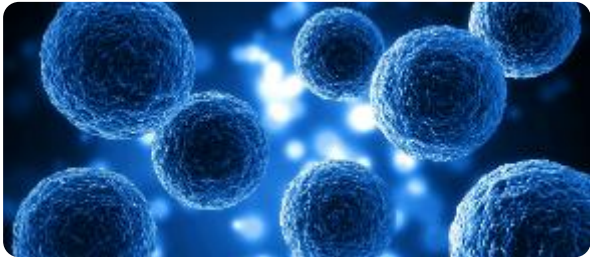
#### omniaBio

- Employs **advanced robotics** to automate various manufacturing tasks, utilizes **biosensors** to monitor and ensure the standardization and quality control of biomanufacturing processes
- Leverages **machine learning algorithms** to analyze extensive datasets from the production cycle
- **Partnership with Somite Therapeutics** – provides expertise in induced pluripotent stem cell (iPSC) technology and AI to support development of cell replacement therapy for Duchenne Muscular Dystrophy (DMD)

**Source:** American Society of Cell and Gene Therapy, CiteLine, News Releases

# Thought Leadership

## Aranca's Insights and Thought Pieces on the CGT Market



### ARTICLE

#### Cell and Gene Therapy – The Next Frontier in Lifesciences

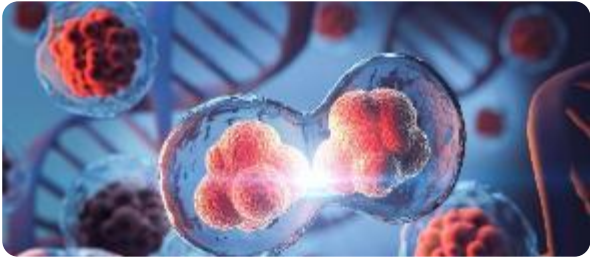
This article explores CGT's clinical pipeline, strategic collaborations, and global investment landscape.



### ARTICLE

#### Gene Therapy: Revolutionizing Type 1 Diabetes Care

This article explores gene therapy's role in treating Type 1 diabetes through cell reprogramming and DNA editing, driven by investments and innovation..



### TEAR SHEET

#### CGT Manufacturing Landscape in Singapore: Current Challenges & Future Landscape

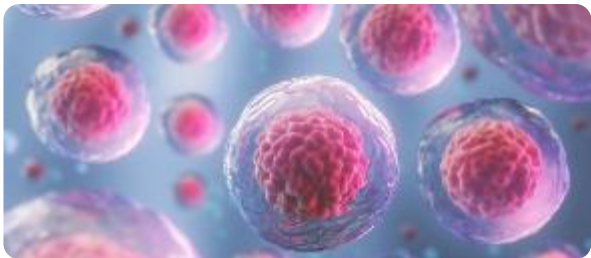
This tear sheet provides insights into challenges with CGT scale-up in Singapore, & efforts by the country to standardize manufacturing & build local ecosystem.



### TEAR SHEET

#### Future Developments in Gene Therapy

This tear sheet explores gene therapy's potential, challenges, & recent advances in novel treatments.



### TEAR SHEET

#### Developments in Cell Based Therapies

This tear sheet explores CGT's market growth, clinical pipeline, partnerships, & investment trends.



### THEMATIC REPORT

#### Gene Therapy – Advanced Treatments for a New Area

This report covers gene therapy challenges, delivery methods, outlook, key investors, & approved drugs.



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**2500+**

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**120+**

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Countries where we have  
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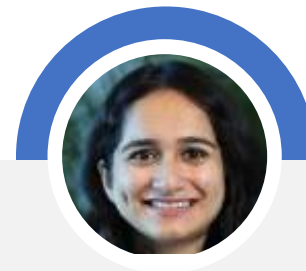
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