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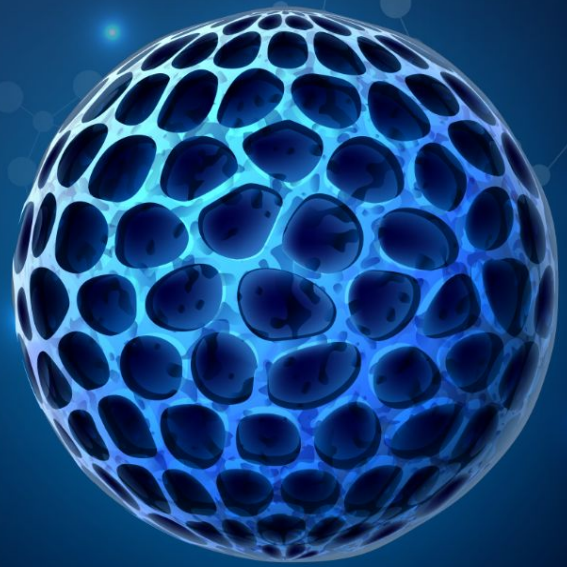
Cell Therapies in Healthcare



Teaser Q1 2023

www.deep-pharma.tech

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Cell Therapies in Healthcare Landscape Overview Q1 2023

Companies - 400
Investors - 900

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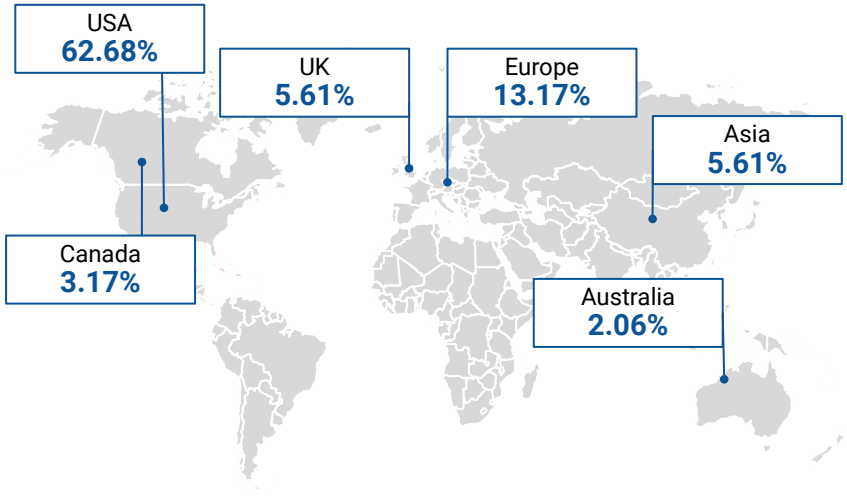
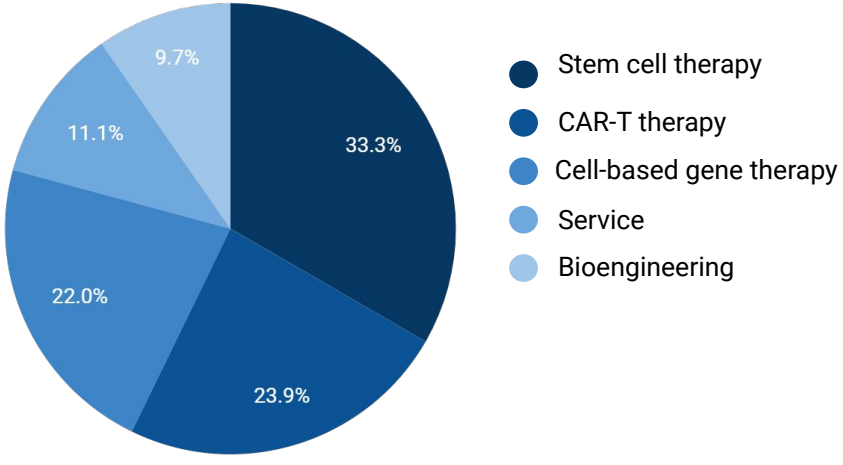
Market at a Glance: Companies

Distribution of Companies by Country, %



Distribution of Companies by Category, %



The **vast majority** of companies of Cell Therapies Industry is located in the **United States** and accounts for **62.68%** of the whole range of analysed companies. The United States, region is followed by Europe with the total companies amounting to **13.17%** of all companies in both regions.

The main domains in which companies are being conducted are **Stem cell therapy, CAR-T therapy, Cell-based gene therapy, Service,** and **Bioengineering** which account for **33.3%**, **23.9%**, **22%, 11.1%** and **9.7%** of all companies, **respectively**.

Cell Therapy Applications

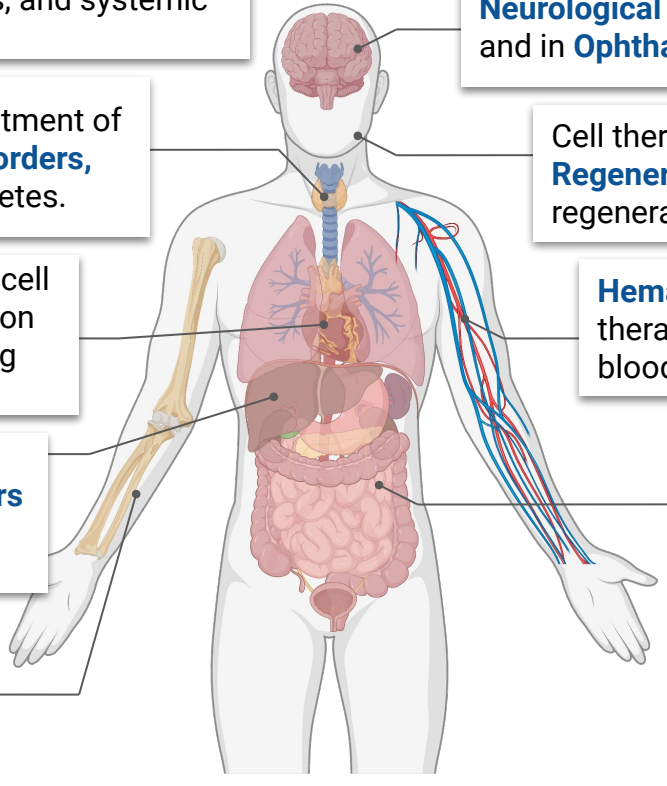
Mesenchymal stem cell therapy, has shown potential in the treatment of **Autoimmune diseases** such as rheumatoid arthritis, multiple sclerosis, and systemic lupus erythematosus.

Cell therapy holds promise for the treatment of **Metabolism and Endocrinological disorders,** including liver disease and type 1 diabetes.

Cardiovascular diseases benefit from cell therapies by promoting the regeneration of damaged heart tissue and improving heart function.

Cell therapy has shown promising results in treating **Hepatology disorders** by promoting liver regeneration and improving liver function.

Orthopedics and **Rheumatology** use cell therapy to repair damaged bones, cartilage, and joints



Cell therapy has been used in the treatment of **Neurological Disorders** such as Parkinson's disease, and in **Ophthalmology** to repair corneal damage.

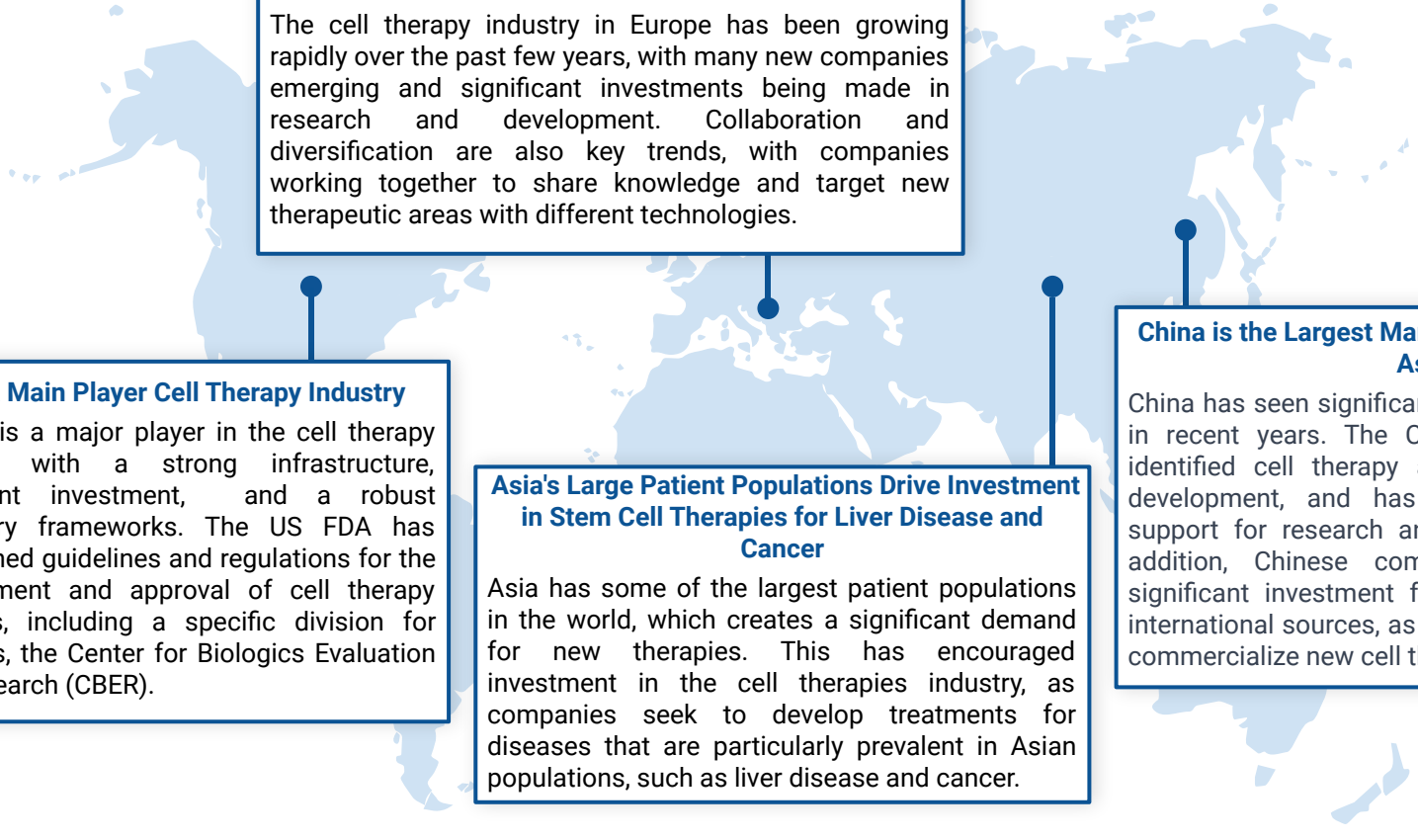
Cell therapy is used in **Dermatology** and **Regenerative medicine** to promote skin regeneration and wound healing.

Hematology involves the use of stem cell therapy for bone marrow transplants to treat blood disorders.

In **Oncology,** stem cells in bone marrow transplants and CAR-T cells are used to target cancer cells.

Cell therapy has shown potential in the treatment of **rare diseases,** including lysosomal storage disorders and inherited metabolic disorders.

Cell Therapy Industry in the Global Context



The Cell Therapy Industry in Europe is Rapidly Growing

The cell therapy industry in Europe has been growing rapidly over the past few years, with many new companies emerging and significant investments being made in research and development. Collaboration and diversification are also key trends, with companies working together to share knowledge and target new therapeutic areas with different technologies.

US is a Main Player Cell Therapy Industry

The US is a major player in the cell therapy industry, with a strong infrastructure, significant investment, and a robust regulatory frameworks. The US FDA has established guidelines and regulations for the development and approval of cell therapy products, including a specific division for biologics, the Center for Biologics Evaluation and Research (CBER).

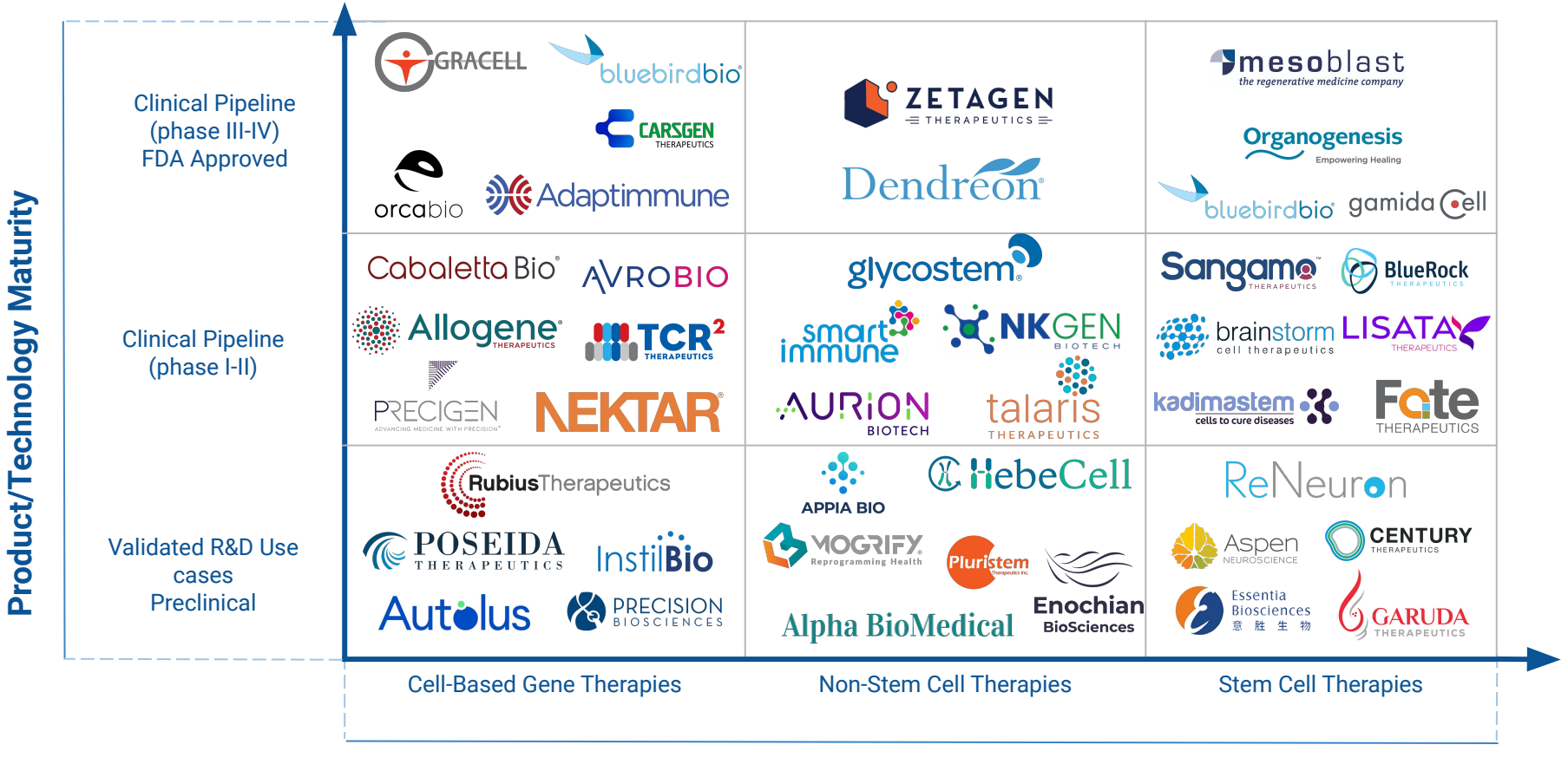
Asia's Large Patient Populations Drive Investment in Stem Cell Therapies for Liver Disease and Cancer

Asia has some of the largest patient populations in the world, which creates a significant demand for new therapies. This has encouraged investment in the cell therapies industry, as companies seek to develop treatments for diseases that are particularly prevalent in Asian populations, such as liver disease and cancer.

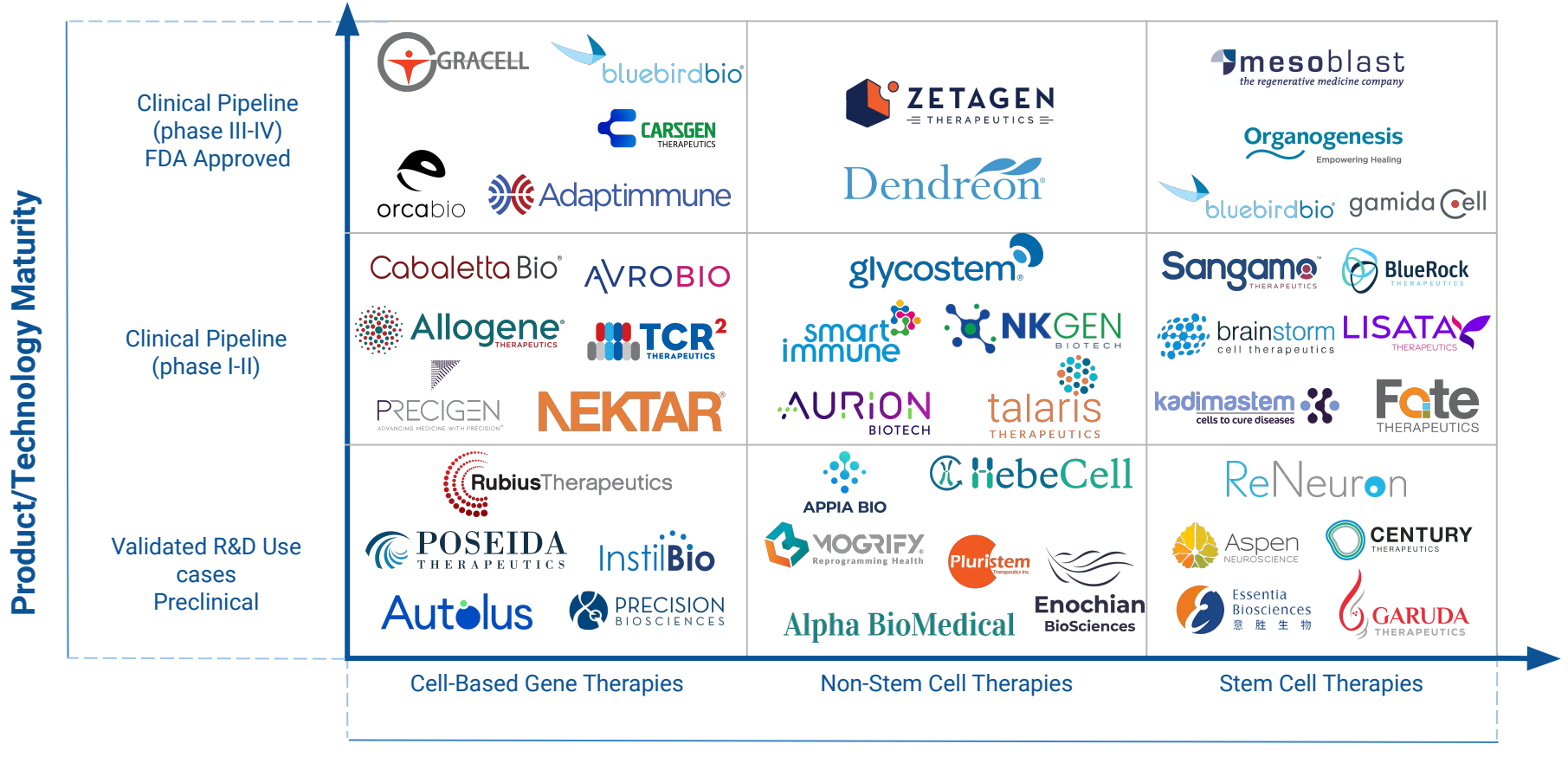
China is the Largest Market for Cell Therapies in Asia

China has seen significant investment in this area in recent years. The Chinese government has identified cell therapy as a strategic area for development, and has provided funding and support for research and commercialization. In addition, Chinese companies have attracted significant investment from both domestic and international sources, as they seek to develop and commercialize new cell therapies.

Analysis of Top 45 Cell Therapy Companies: R&D Maturity vs Application Focus



Analysis of Top 45 Cell Therapy Companies: R&D Maturity vs Application Focus



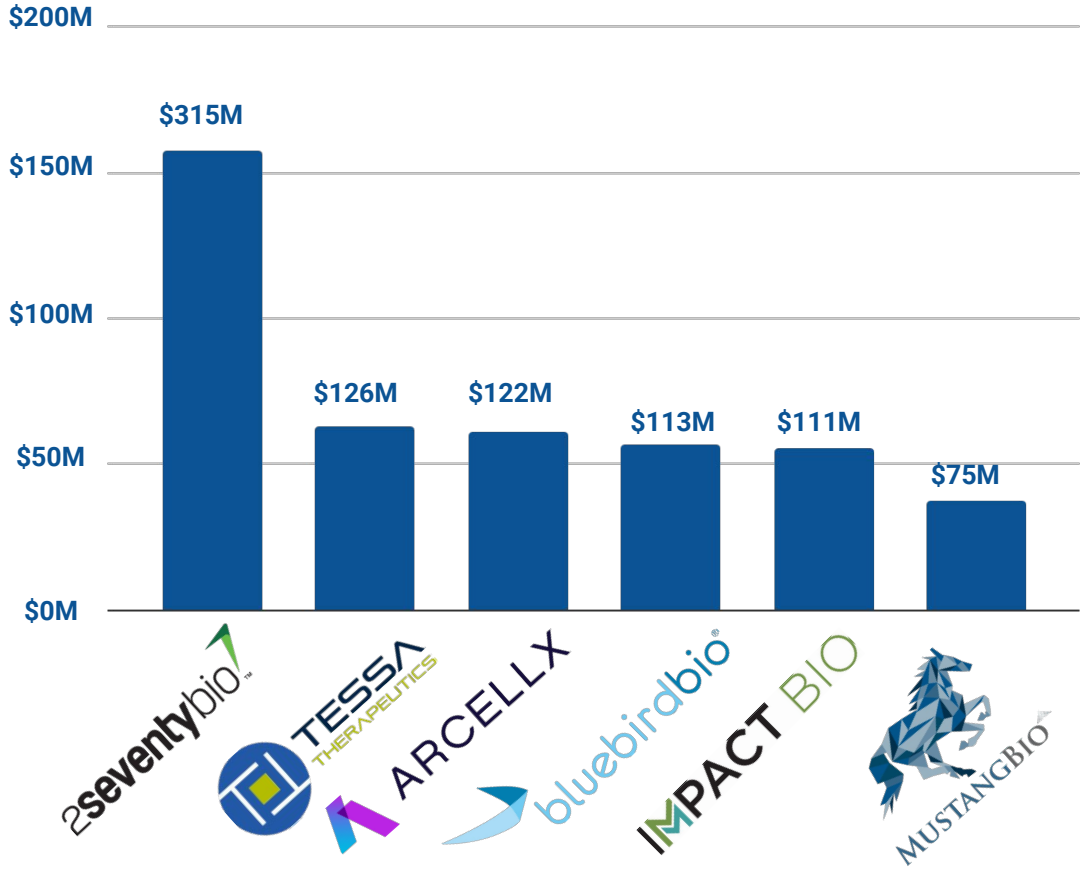
FDA Approved Stem Cell Therapies

Company	Cell Therapy Name	Disease	Year of Initial US Approval
Gamida-Cell	OMISIRGE	Hematopoietic Disorders	2023
bluebird bio	SKYSONA	Cerebral Adrenoleukodystrophy	2022
bluebird bio	ZYNTEGLO	ß-Thalassemia	2022
MD Anderson Cord Blood Bank	HPC, Cord Blood - MD Anderson Cord Blood Bank	Hematopoietic Disorders	2018
Cleveland Cord Blood Center	CLEVECORD	Hematopoietic Disorders	2016
LifeSouth Community Blood Centers	HPC, Cord Blood - LifeSouth	Hematopoietic Disorders	2016
Bloodworks	HPC, Cord Blood - Bloodworks	Hematopoietic Disorders	2016
SSM Cardinal Glennon Children's Medical Center	ALLOCORD	Hematopoietic Disorders	2013
Duke University School of Medicine	DUCORD	Hematopoietic Disorders	2012
Organogenesis	GINTUIT	Mucogingival conditions	2012
Clinimmune Labs	HPC, Cord Blood	Hematopoietic Disorders	2012
New York Blood Center	HEMACORD	Hematopoietic Disorders	2011

CAR-T Cell Therapy Investment Landscape

Some of the major deals in 2022-2023 included:

- **2seventhy bio** raised on IPO **$315 million** during the period February 2022 - March 2023.
- **Tessa Therapeutics** attracted 5 investors and received a funding of **$126 million** ove one Series A round in June 2022
- **Arcellx** raised on IPO **$122 million** in the United States in 2022.
- **Bluebird Bio** raised on IPO **$113 million** in January 2022.
- **ImPACT Bio** has raised **$111 million** during Series B round in January 2022.
- **Mustang Bio** obtained on IPO **$75 million** in the United States in March 2022.



Top 20 Investors

INVESTORS	COMPANIES	INVESTED IN
Alexandria Venture Investments	15	Jasper Therapeutics, Aspen Neuroscience, Ambys Medicines, egenesis, Obsidian Therapeutics, Sonoma Biotherapeutics, Precision Biosciences, Neurona Therapeutics, Wugen, Cartography Biosciences, Kytopen, Garuda Therapeutics, TCR2 Therapeutics, VOR, Nohla Therapeutics
RA Capital Management	15	Orchard Therapeutics, VOR, artiva, be Biopharma, Legend Biotech, Achilles Therapeutics, Bellicum, TScan Therapeutics, Athersys, abcuro, Precision Biosciences, nkarta, Obsidian Therapeutics, Century Therapeutics, bluebirdbio
OrbiMed	14	cogent Biosciences, Iovance Biotherapeutics, magenta Therapeutics, Adicet Bio, Gracell 亘喜生物, Harpoon Therapeutics, Athersys, Aspen Neuroscience, Garuda Therapeutics, Impact Bio, Century Therapeutics, Intellia Therapeutics, Achilles Therapeutics, LifeCell
Fidelity Management and Research Company	>12	Allogene Therapeutics, BioNTech, allo VIR, Intellia Therapeutics, Neon Therapeutics, Nohla Therapeutics, Wugen, Sonoma Biotherapeutics, Poseida Therapeutics, VOR, Century Therapeutics, elevatebio
ARCH Venture Partners	11	Aspen Neuroscience, Sana Biotechnology, egenesis, CERO Therapeutics, Fate Therapeutics, Sonoma Biotherapeutics, Nohla Therapeutics, be Biopharma, 药明巨诺 JW Therapeutics, bluebirdbio, VIR
EcoR1 Capital	11	2seventybio, Abeona Therapeutics, elevatebio, allo VIR, immatics, neogene, Atara Bio, artiva, magenta Therapeutics, Intellia Therapeutics

Top 20 Investors

INVESTORS	COMPANIES	INVESTED IN
California Institute for Regenerative Medicine	10	
Invus	10	
Samsara BioCapital	10	
Surveyor Capital	10	
Google Ventures	9	
National Institutes of Health	9	
Redmile Group	8	
RTW Investments	8	

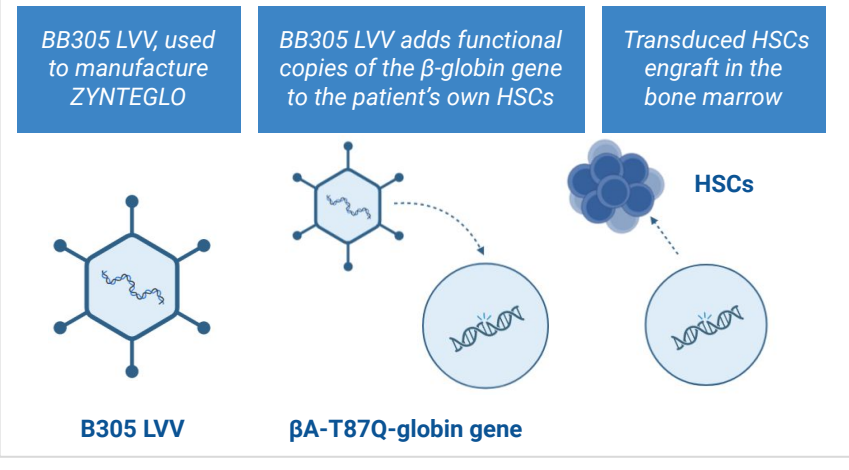
Top 20 Investors

INVESTORS	COMPANIES	INVESTED IN
Innovate UK	8	
Casdin Capital	7	
Cormorant Asset Management	7	
Janus Henderson Investors	7	
Logos Capital	7	
Perceptive Advisors	7	

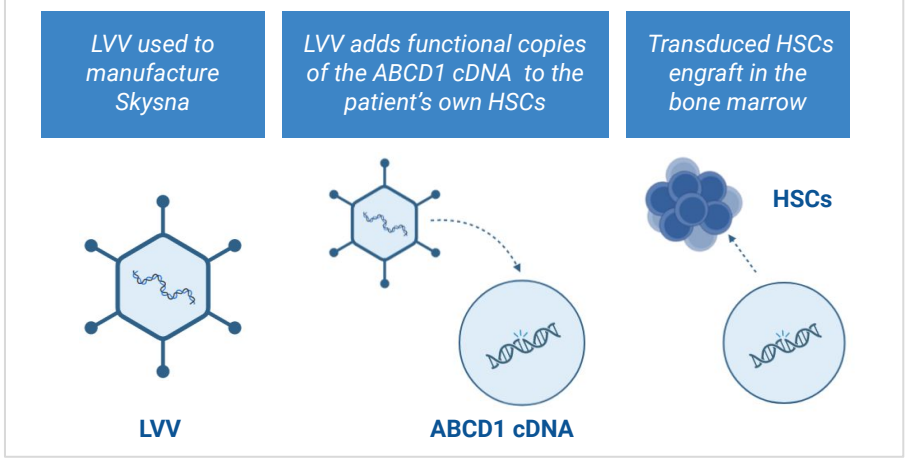
Cell Therapy Application Use Cases: bluebird bio

bluebird bio specializes in **cell-based gene therapy** with four primary diseases in its crosshairs: **Cerebral Adrenoleukodystrophy (CALD)**, **Sickle Cell Disease (SCD)**, and **Transfusion-Dependent Beta-Thalassemia (TDT)**. bluebird bio is focused on **gene addition**. In gene addition therapies, functional copies of a gene are delivered to a patient's **stem cells** using a delivery system called a "vector." bluebird bio uses **lentiviral vectors (LVVs)** because they have unique properties that are well-suited to treating a range of severe genetic diseases. bluebird.bio hqs two therapies approved by FDA: **Zynteglo** and **Skysona**.

Zynteglo works by adding functional copies of a modified form of the beta-globin gene (βA-T87Q-globin gene) into a patient's own **hematopoietic stem cells** (**HSCs**) to allow them to make normal to near normal levels of total hemoglobin without regular RBC transfusions



Skysona is the first FDA-approved therapy shown to slow the progression of **CALD**. Skysona adds functional copies of the ***ABCD1*** cDNA into patients' **hematopoietic stem cells** (HSCs) through transduction of autologous CD34+ cells with LVV.



Key Takeaways

Cell Therapy is a **rapidly growing industry** that has the potential to revolutionize healthcare by providing new treatments for diseases that were previously untreatable. There are currently **over 1,000** registered cell therapy **clinical trials** underway worldwide, and the growing number of clinical trials in cell therapy reflects the increasing interest and investment in this field, driven by the potential to develop new treatments for a wide range of diseases.

CAR-T cell therapy is one of the most promising areas of cell therapy, with FDA-approved treatments for certain types of blood cancer and ongoing clinical trials for other types of cancer. The market is valued at approximately **$12.56 billion** in Q1 2023. However, the high cost of CAR-T therapy and regulatory challenges remain significant obstacles for the industry's growth. Despite these challenges, the CAR-T therapy industry is expected to continue its **growth trajectory**, offering new and improved treatment options for cancer patients.

In Q1 2023, **The U.S. Food and Drug Administration** approved new stem cell therapy. **Gamida Cell's** cell therapy **Omisirge** (omidubicel-onlv)is a substantially modified allogeneic (donor) cord blood-based cell therapy to quicken the recovery of neutrophils (a subset of white blood cells) in the body and reduce the risk of infection.

The total market value of companies that use or develop new cell therapies is **$78B** as of end of April 2023 which includes more than 125 companies that reached IPO and their number continue to rise. Top 3 companies by market capitalization are **BioNTech $28.5B**, **Legend Biotech $11.51B and CRISPR Therapeutics $3.88B .**

Deep Pharma Intelligence — New Era in Pharma Analytics

Deep Pharma Intelligence (DPI), an analytical subsidiary of Deep Knowledge Group, is a highly specialised think tank in the area of BioTech innovation profiling, market intelligence, and BioTech development advisory. The company is dedicated to producing powerful data mining and visualisation systems, interactive analytics tools, and industry reports, offering deep technical insights, market intelligence, and strategic guidance in the high growth and significant opportunity areas.

DPI is Focusing on Three Key Activities:

Conducting Market Intelligence

Producing regular **open-access** and **proprietary reports** on the emerging topics and trends in the pharmaceutical and healthcare industries. All reports are supported by our back-end analytics systems and tools that allow to receive fresh insights and updates about opportunities and risks.

Creating Big Data Analytical Dashboards

Building a comprehensive **Big Data Analytical Dashboard** (SaaS) as a one-stop-platform for all market and business intelligence operations our customers may need, including profiling thousands of companies, market signals and trends based on tens of millions of constantly updated data points.

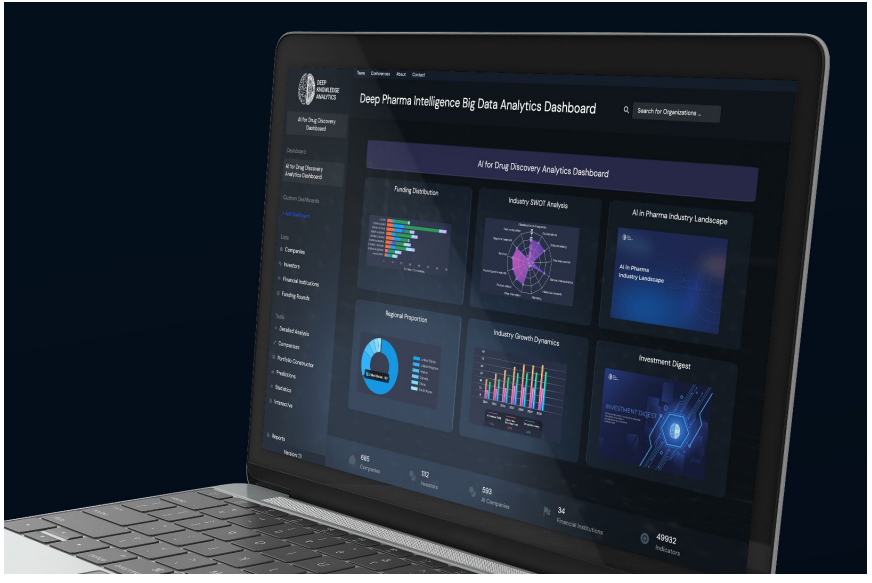
Producing Scientific Content

DPI provides a **full-cycle development of articles, scientific journals, and books**. We are ready to develop a detailed Requirement Specifications document, including layout of the journal, fully designed brand book, with example templates for each chapter.

AI in Drug Discovery Analytical Dashboard

AI in Drug Discovery Analytical Dashboard is a fundamental tool for strategic insights, opportunity evaluation, competitor profiling, and other purposes relevant to Pharma and BioTech decision-makers, life science investors, consulting companies, and regulatory agencies.

600	Companies
1,100	Investors
290	R&D Collaborations
120	Clinical Trials
170	Parameters of Automated SWOT Analysis



Market Intelligence Focus

- Automated SWOT Analysis
- Stock Price Forecasting
- Interactive Chart Builder
- Automated Competitive Analysis
- Financial Portfolio Constructor
- Matching Tool for Investors

Comprehensive Market Intelligence

Deep Pharma Intelligence's proprietary services include **custom consulting projects based on the specific customer needs,** as well as a collection of preproduced 'ready-to-use' proprietary reports, developed by our research team and covering general trends and specific action ideas and strategy insights related to the most promising business prospects (e.g. new technologies, BioTech start-ups), M&A prospects (e.g. pipeline development targets), and strategic growth ideas (trends profiling, industry overviews, etc.).

Selected Open Access Reports

World's AI for Drug Development Landscape: Focus on Asia gives a complete picture of the industry environment in terms of AI usage in drug discovery, clinical research, and other elements of pharmaceutical research and development with the focus on Asia.

Artificial Intelligence in Nuclear Medicine Q1 2023 report aims to provide a comprehensive overview of the current state of nuclear medicine markerand research. This overview highlights the trends and insights in a form of informative mind maps and infographics.

Artificial Intelligence for Drug Discovery Landscape Overview Q1 2023 offers a thorough analysis of the market environment with regard to the use of AI in drug development, clinical research, and other areas of pharmaceutical R&D.

Business Consulting Services

Deep Pharma Intelligence offers a comprehensive range of **consulting services**, including **market and competitor research, technology scouting and due diligence, investment landscape profiling, and comprehensive analytics support for investment decision-making.**

Investment Landscape Profiling

Identifying investment trends in the pharma, BioTech, medicine, healthcare, drug development technological space, investments risk profiling based on risk tolerance, risk capacity, and risk requirements.

Technology Scouting and Due Diligence

Identifying, locating, and evaluating existing or developing technologies, products, services, and emerging trends. The service includes business, science and technology, intellectual property (IP) profiling, and potential assessment.

Market Research

Thorough market assessment within a specific industry in the field of pharma, BioTech, medicine, healthcare, drug development, AI, and others.

Competitor Research

Competitive analysis of companies, technologies, technological sectors, etc. Competitive analysis includes SWOT analysis and competitive profiling.

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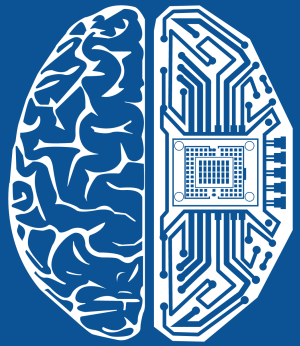

Link to the Report: www.deep-pharma.tech/ai-in-dd-q3-2022-subscribe

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