INITIATED REPORT

MEDEZE GROUP (MEDEZE TB)

THAILAND / SET / HEALTH CARE SERVICES

17 November 2025

"Fit as a fiddle" on ATMP S-curve

- A first-mover competitive advantage in stem cell therapy ATMP
- 37% of 2028E revenue will come from ATMP
- Initiated with a BUY for Thailand's healthcare angel; THB8.5 TP

A first-mover competitive advantage in stem cell therapy ATMP

MEDEZE is Thailand's only provider of stem cell therapy for treatments in diseases and other applications like anti-aging, with 15+ years of experience providing services in the analysis, isolation, cultivation, storage of stem cells, and NK cells potency testing. We believe the key "game changer" factor for MEDEZE is the success in its stem cell to be listed as one of an alternative treatment under the Advanced Therapy Medicinal Products (ATMPs), currently under the government's development stage in tandem with the global advancement in ATMPs.

37% of 2028E net profit will come from ATMP net profit

In 2025, revenue and net profit are likely to decline due mainly to the company's investment in the preparation of turning its stem cell therapy product from an alternative to a medicine for not only rare but also common diseases. Yet we project revenue growth to accelerate starting in 2026 onwards, driven by the treatment-turn-medicine ATMP for MEDEZE's stem cell therapy, projecting ATMP revenue to jump from THB29m in 2026 to THB711m in 2028 with the ATMP revenue portion for MEDEZE rising to 3.2%/20.6%/36.7% in 2026-28.

Thailand is far behind in global healthcare but not ATMP

Despite a "technology-recipient" country for healthcare products, Thailand is now ready to advance its ATMP in an expressway, considering that Thai regulators have already issued a number of regulations required for ATMPs to be registered as a medicine, based on required conditions that include clinical trials under sandbox project.

Why is ATMP a "palpable", if not panacea, medical treatment?

With a host of competitive advantages over current available traditional treatments, we think ATMP is likely to create an S-curve growth for MEDEZE in 2026 onwards, premised on ATMP's 1) comparable cost but more effective than traditional treatment; 2) alternative treatment solutions when other treatments fail; 3) more suitable for senior or patients who are unable to take traditional treatments 4) lower side effects (autologous); and 5) longer lasting effect, usually 4-5 years.

Initiated with a BUY for Thailand's healthcare angel; THB8.5 TP

We initiated MEDEZE with a BUY and a TP of THB8.5, based on 25x 2026E P/E, justified by 1) net profit growth of 28% CAGR in 2024-28E, driven by ATMP net profits; 2) rising net profit margins from 26.9% in 2025 to 47.9% in 2028, driven by higher revenues from existing stem cell and ATMPs; 3) higher ROEs from 7.1% in 2025 to 17.8% in 2028, boosted by the high-margin ATMP earnings; and 4) premium valuation to average 2026E P/E of 20-25x for global pharmaceutical peers on MEDEZE's first-mover competitive advantages in stem cell ATMP.

ESG Rating : n.a.

CG Rating : ▲▲▲

BUY

Target Price 12M (THB)	**8.50**
VS. BB Consensus TP (%)	+36.0%
Share Price (THB)	6.25
Upside/Downside (%)	+36.0%

Share Data

Market Cap (THB m)	6,675.00
Par (THB)	0.50
Free Float (%)	25.56
Issued shares (m shares)	1,068

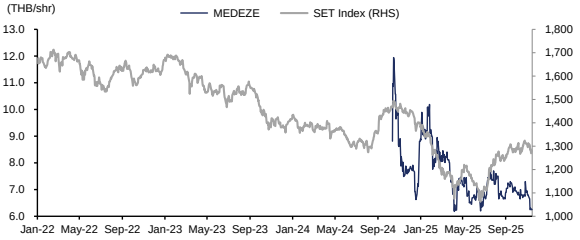
Financial forecast

YE Dec (THB m)	2024	2025E	2026E	2027E
Revenue	874	841	909	1,397
Net profit	339	218	365	647
Core net profit	339	218	365	647
vs Consensus (%)		(23.0)	(11.6)	26.7
Net profit growth (%)	41.4	(35.7)	67.5	77.4
Core net profit growth (%)	41.4	(35.7)	67.5	77.4
EPS (THB)	0.32	0.20	0.34	0.61
Core EPS (THB)	0.32	0.20	0.34	0.61
Chg from previous (%)		0.00	0.00	0.00
DPS (THB)	0.31	0.06	0.10	0.18
P/E (x)	28.06	30.63	18.29	10.31
P/BV (x)	3.25	2.08	1.81	1.48
ROE (%)	19.37	7.11	10.60	15.79
Dividend yield (%)	3.51	0.98	1.64	2.91

Source: Financial Statement and Globlex securities

Share Price Performance (%)

	1M	3M	6M	YTD
Stock	(6.02)	(6.02)	(11.97)	(29.78)
Market	(6.23)	(6.21)	(15.62)	(22.53)
12M High/Low (THB)				10.50 / 5.75



Major Shareholders (%) as of 7 May 2025

Medeze Holding Company Limited	33.77
Mr. Veerapol Khemarangsan	24.01
Mr. Chumrus Sakulpaisal	13.84

Company Profile

The company provides services in the analysis, isolation, cultivation, and storage of stem cells, as well as NK cells potency testing.

Source: SETSMART, SET

Analyst

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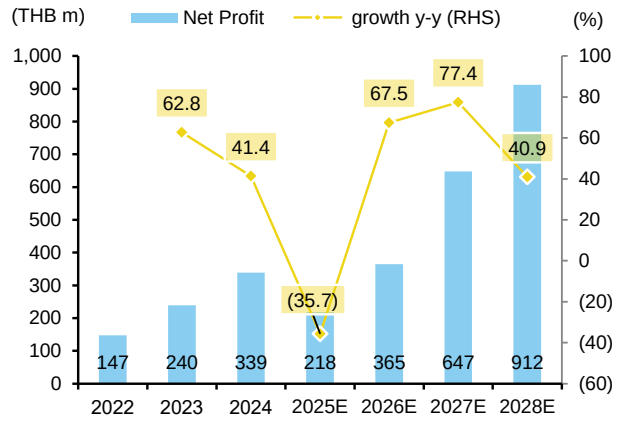
"Fit as a fiddle" on ATMP S-curve growth

Executive summary

MEDEZE is Thailand's only provider of the stem cell therapy for treatments in a number of diseases and other applications like anti-aging, with 15+ years of experience providing services in the analysis, isolation, cultivation, storage of stem cells, as well as NK cells potency testing.

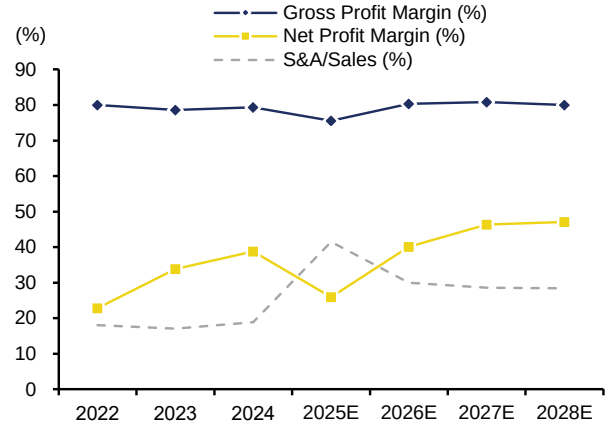
While revenue and net profit are likely to decline in 2025 due mainly to the company's investment in the preparation for turning its stem cell therapy product from an alternative to a medicine for not only rare but also common diseases, we project revenue growth to accelerate starting in 2026 onwards, driven by the treatment-turn-medicine ATMP for MEDEZE's stem cell therapy.

Exhibit 1: Net profit and net profit growth



Sources: MEDEZE; Globlex Research

Exhibit 2: Key profitability margins

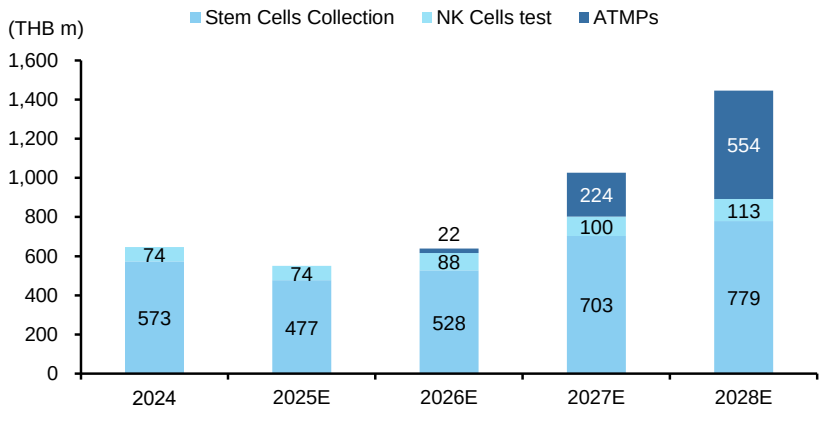


Sources: MEDEZE; Globlex Research

We believe ATMP will be the fast-growing revenue contributions to MEDEZE, projected to jump from THB29m in 2026 to THB287m in 2027 and THB711m in 2028 with the ATMP revenue portion for MEDEZE to surge from 3.2% of total revenue in 2026 to 20.6% in 2027 and 36.7% in 2028.

In 2022-24, MEDEZE generated revenue at THB0.6b-0.8b, coming from four existing business segments related to the stem cell - cord blood (9-10% of total revenue), cord tissue (53-54%), adipose (17-19%), hair follicle (0.2%), NK cells (16-17%), and others (1-3%).

Exhibit 3: Gross profit breakdown by key segments



Sources: MEDEZE; Globlex Research

In the U.S., 7 CAR T-cell products have FDA marketing approval, and each has received marketing approval in other major healthcare markets. Unfortunately, some markets including New Zealand and emerging economies like India have not seen approval of any of these commercial products. Seven Cell and Gene Therapy products received approval by the FDA in 2024 (Amtagvi, Aucatzyl, Beqvez, Kebilidi, Ryoncil, Symvess, Tecelra). Many of these marked 'firsts' in the field for U.S.

Exhibit 4: Estimated global approved gene and stem cell therapies

	Cases approved	Cases in pipeline	Target diseases
Gene therapy	32-36	> 2,000	Rare and cancer diseases
Cell therapy	29-32	> 1,100	Rare and cancer diseases

Sources: National Institutes of Health

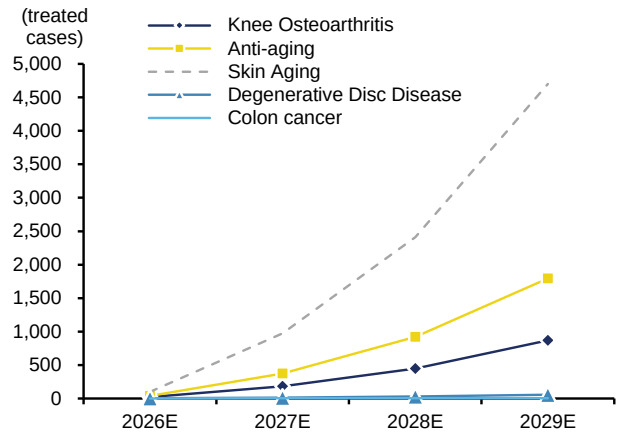
Despite a "technology-recipient" country for healthcare products, Thailand is now ready to advance its ATMP in an expressway, considering that Thai regulator the Medicines Regulation Division (MRD) under the Food and Drug Administration, has already issued a number of regulations required for ATMPs, effectively making ATMP products, providing that they successfully receive permits based on required clinical trials, eligible to be registered as a medicine for treatment.

MEDEZE's stem cell therapy ATMP to be registered as a medicine in 2H26E. we project MEDEZE's stem cell therapy ATMP to be registered as a medicine by 4Q26, passing the 6 to 9-month clinical phase period by Sep or Oct-2026 before being registered as a medicine and then to be marketed to hospitals nationwide.

Five key ATMP regulations and guidelines have already been issued and legalized, including guidelines for cell therapy ATMP and gene therapy ATMP to be registered as medicine, guidelines for conditional ATMP approval, standards for R&D to be used as a required component for ATMP to be registered as a medicine, and classification for ATMPs.

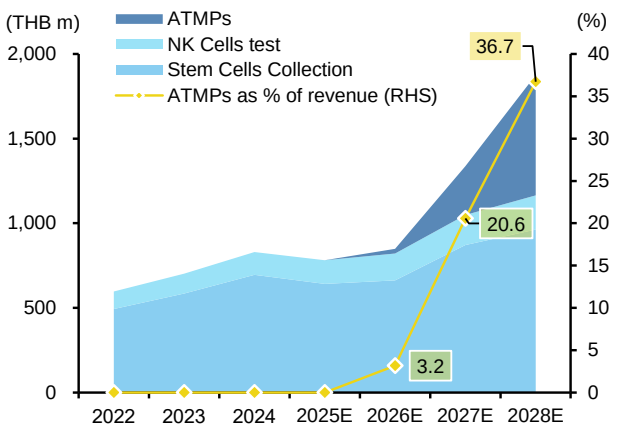
With a host of competitive advantages over current available traditional treatments, we think ATMP is likely to create an S-curve growth for MEDEZE in 2026 onwards, premised on ATMP's 1) comparable cost but more effective than traditional treatment; 2) alternative treatment solutions when other treatments fail; 3) more suitable for senior or patients who are unable to take traditional treatments 4) lower side effects (autologous); and 5) longer lasting effect, usually 4-5 years.

Exhibit 5: MEDEZE's five targeted diseases for ATMP



Sources: MEDEZE; Globlex Research

Exhibit 6: Revenue breakdown by key segments vs ATMP revenue as % of total revenue



Sources: MEDEZE; Globlex Research

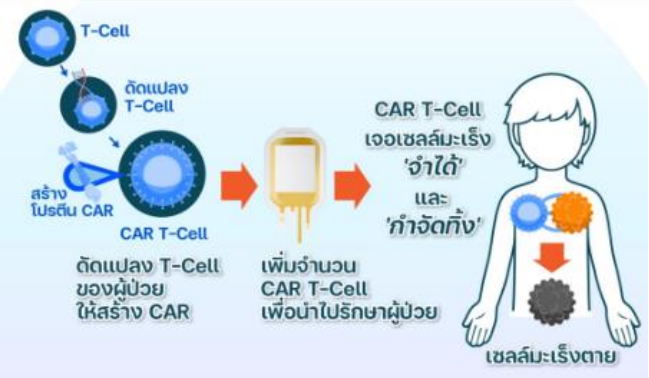
Advanced therapy commercialization analysis

We believe the key “game changer” factor for MEDEZE is the success in its stem cell to be listed as one of an alternative treatment under the Advanced Therapy Medicinal Products (ATMPs), currently under the government’s development stage in tandem with the global advancement in ATMPs.

ATMPs: moving from complementary to mandatory as the strategic imperatives for ATMP Normalization

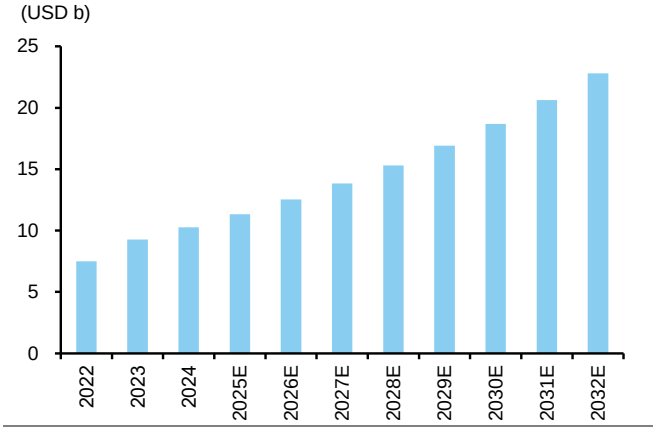
Advanced therapy medicinal products (ATMPs) are a significant innovation in medicine, categorized by the European Medicines Agency into four types: gene therapy medicines, somatic cell therapy medicines, tissue-engineered medicines and combined ATMPs. ATMPs, based on genes, tissues, or cells, represent a fundamental shift in treating disease, offering groundbreaking opportunities, particularly for chronic and rare conditions. They hold potential for treating various conditions, including rare diseases, degenerative diseases like Parkinson’s and Alzheimer’s and cancers. Gene and cell therapies are advancing rapidly, with over 1,700 approved clinical trials worldwide.

Exhibit 7: CART-Cell for cancer treatment



Sources: MEDEZE

Exhibit 8:ATMP’s global market size and growth projections

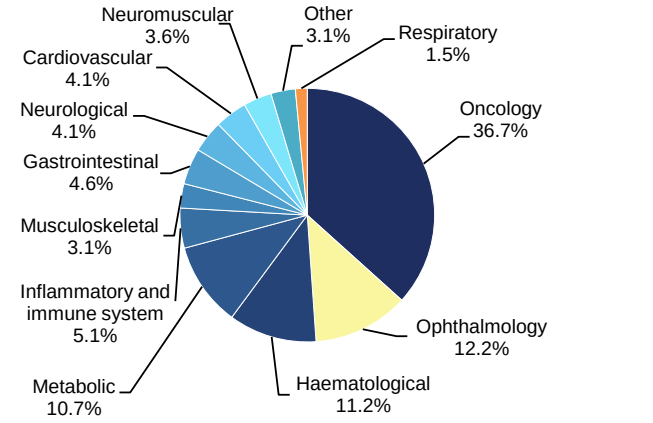


Sources: ResearchGate

Market growth is substantial. The commercial trajectory for ATMPs is highly positive, substantiated by a global market projected to accelerate from USD42.04b in 2025 to approximately USD170.47b by 2034, reflecting a strong Compound Annual Growth Rate (CAGR) of 16.83%, according to many researches including Precedence Research and European Medicines Agency (EMA). ResearchGate similarly forecasts that the global market for ATMPs will reach USD22.80b by 2032, growing at a CAGR of 10.50%, lower than EMA’s 16.8% CAGR, but still up sharply from USD9.28b in 2023.

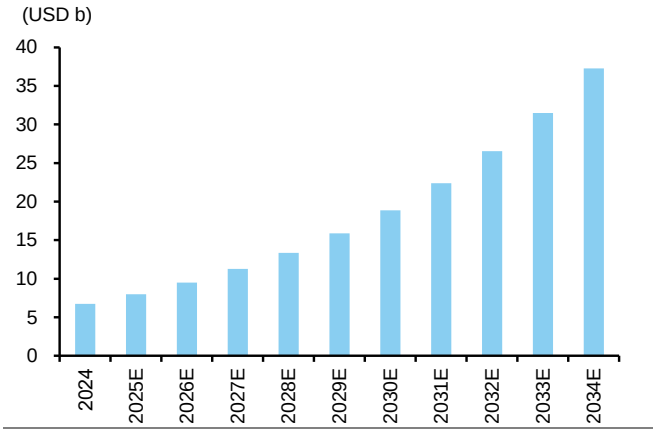
Despite this profound market validation, evidenced further by the realization of "blockbuster" sales status for key products such as Yescarta (a gene therapy called CAR T-cell therapy used to treat certain types of blood cancer) and Zolgensma (a one-time gene therapy used to treat Spinal Muscular Atrophy (SMA) in children under two years old), the transition from specialized treatment to "normal treatment" is constrained by persistent structural friction. Notable successes include 1) Glybera for lipoprotein lipase deficiency; and 2) Roctavian for haemophilia. Despite limited current approvals, many gene therapies are expected to gain market approval soon.

Exhibit 9: Gene therapies' therapeutic areas



Sources: Doi.org

Exhibit 10: ATMP Contract Development and Manufacturing Organization (CDMO) market growths



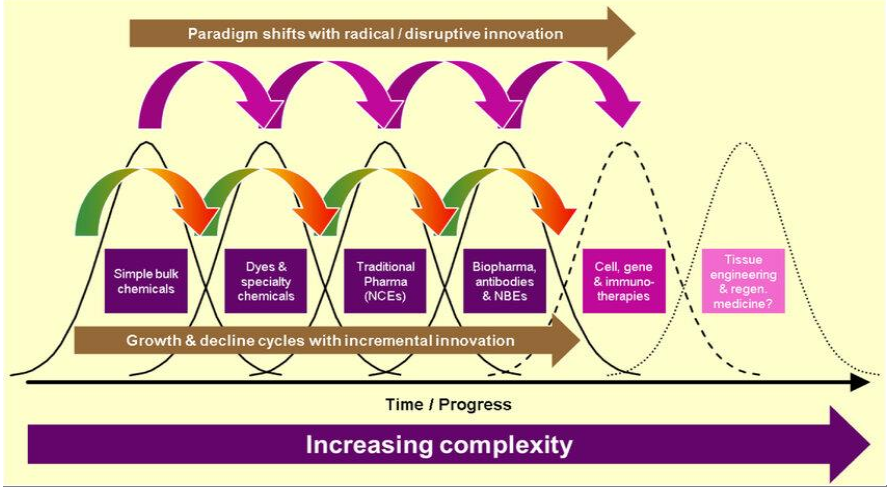
Sources: European Medicines Agency

Current clinical studies are exploring immune-based therapies like Chimeric Antigen Receptor T-cell therapy (CAR-T cells), cytotoxic T lymphocytes, natural killer cells and mesenchymal stromal cells. CAR-T cell therapies, such as Yescarta and Kymriah, have shown promise in treating B-cell lymphoma. However, high development and manufacturing costs limit accessibility, exemplified by Hemgenix, a gene therapy for haemophilia B priced at USD3.5m.

Increased ATMP sales have spurred investor interest in R&D, leading to advancements in technology and manufacturing processes. Despite challenges, the future is promising with more academic and commercial ATMP clinical trials. There are now 32 approved gene therapies globally. To attract industries, the focus should shift from rare to common diseases, and alternative reimbursement models could help manage high costs. A trained workforce and public involvement are crucial for the successful delivery of ATMPs.

The primary impediments to widespread acceptance and normalization are economic, driven by exceptionally high upfront treatment costs — sometimes reaching up to USD2m per patient — and resulting complexities in Pricing and Reimbursement (P&R). Concurrently, normalization is hampered by operational friction related to specialized logistics, manufacturing scale-up, and a lack of standardized clinical referral pathways in major Western markets. Challenges include stringent regulatory requirements, safety and ethical concerns. For example, Glybera faced multiple rejections before approval due to safety issues.

Exhibit 11: ATMPs is one of the disruptive innovations for medicines



Sources: ResearchGate

Asia Pacific market growth is at the highest. Geographically, North America retains market dominance, but Asia-Pacific is forecasted as the fastest-growing region. Key Asian economies, namely China and Japan, have implemented sophisticated, accelerated regulatory and reimbursement pathways that are highly conducive to early market entry and the deployment of innovative P&R mechanisms.

Thailand offers a highly promising market under its healthcare system strength. Though a nascent market, in the past Thailand still exhibits significant structural barriers, including fragmented policy and an absence of clear coverage pathways, positioning them as high-friction environments for immediate commercialization. Strategic success hinges on overcoming these operational and financial barriers through industrializing manufacturing and implementing risk-sharing financial models tied to measurable long-term patient outcomes. Fortunately, ATMPs sandbox under the government's support has already showed sign of promising relief, if snot shout of joy, for the ATMPs growth outlook in the next few years.

Perusing the ATMP landscape and commercial trajectory

Before one could be fully aware of the strategic and economic importance of ATMPs, we would like to elaborate the true meaning of ATMPs.

Categorization and Therapeutic Scope of ATMPs

ATMPs are distinct medicines for human use that leverage biological components—genes, tissues, or cells—to achieve therapeutic effects. They are categorized into three principal types based on their mechanism and composition:

- **ATMP type#1: Gene therapy medicines.** These introduce genes that are intended to achieve a therapeutic, prophylactic, or diagnostic effect, or simply saying they are inserted into the body to treat diseases such as cancer or genetic disorders.

- **ATMP type#2: Somatic-Cell therapy medicines.** These products contain cells or tissues whose biological characteristics have been manipulated or have been engineered to change their biological features, or they comprise cells or tissues used for functions different from their original physiological purpose.

- **ATMP type#3: Tissue-Engineered medicines.** These are composed of cells or tissues modified specifically to be utilized for the repair, regeneration, or replacement of human tissue.

ATMPs have great potential to treat multiple conditions, from rare diseases through degenerative diseases such as Parkinson's and Alzheimer's to solid and blood cancers. Current regulatory approvals predominantly target rare and orphan diseases. This strategic focus addresses areas of high unmet need, which helps justify the high initial development and treatment costs, while also leveraging existing expedited regulatory mechanisms designed for these patient populations. For example, marketed successes include therapies for spinal muscular atrophy (SMA) and various B-cell lymphomas.

ATMP gene therapy is more challenging than cell therapy. If we compare the ATMP gene vs cell therapy, gene therapy has been achieved a more success than cell therapy, with over 1,700 approved clinical trials worldwide. However, the risk for gene mutation and contamination is much higher than the cell therapy, thereby making the gene therapy ATMP more difficult to be approved than cell therapy.

Many success stories such as Glybera to treat lipoprotein lipase deficiency or Roctavian to treat haemophilia, are likely to be followed by many products soon to receive market approvals in the coming years. Yet regulatory hinders are high mainly due to the links to safety and ethical concerns. For example, Glybera had failed three times before the final marketing authorization as the transfer of genes could have an impact on germ lines and the quality and stability of the transgene and the type of vectors used could lead to mutagenic events. In terms of cell therapies, CAR-T therapies have shown great promise with the historical approval of Yescarta and Kymriah to treat B-cell lymphoma. The U.S. FDA has already approved 7 CAR-T products, and other countries have followed to accelerate approvals for CAR-T therapies targeting blood cancers (lymphomas, leukaemia).

ATMP commercialization is more welcome by investors and regulators. Thanks to the jumping sales of ATMP products, investors are now supporting R&D programs to continuously bring in new advancements. In fact, in many instances, companies are now shifting toward technology and process improvements with more efficient supply chains or new manufacturing models such as decentralized cell therapy centers or physical hubs that provide infrastructures (a GMP facility is a rigorous environment with really high design costs), laboratories, offices, production and supply chain services to reduce the costs or lack of capabilities of small companies fueling innovation and business growth.

An ecosystem of stakeholders is being built to support such business models. For example, Miltenyi Biotec has specialized in the production of CliniMACS Prodigy devices that are vastly used in cell therapy manufacturing. There are currently over 1,000 clinical studies of cell therapies that explore immune-based therapies on CAR-T, cytotoxic T lymphocytes, natural killer cells, mesenchymal stromal cells or using fibro-blasts. However, similar to gene therapies, complex regulatory and developmental landscapes pose a challenge to further market approvals.

Another huge challenge that ATMPs are facing is that generally the ideas are developed in academia or small startups where there is a lack of understanding of manufacturing processes (scaling up) or regulatory requirements, which later on can lead to rejection by national agencies. Furthermore, the high costs associated with ATMP development and manufacturing make them unaffordable to public and private patients, limiting access to such treatments. A clear example is the approval of Hemgenic to treat haemophilia B, the first gene therapy and most expensive drug with a price tag of USD3.5m.

Even though the ATMP field is facing several challenges, the future is bright for ATMPs. The number of academic and commercial ongoing ATMP clinical trials has substantially increased from 2016. **There are now globally 32 approved gene therapies including genetically modified cell therapies** with many at different phases of clinical trial cycle and showing great potential to treat uncurable diseases. To overcome challenges, the ATMPs' landscape has to move from rare to common diseases so these treatments become more attractive for industries. However, one arising question is how can healthcare systems afford extremely expensive treatment for a common disease such as diabetes? Alternative reimbursement models could be a solution to avoid the high burden on healthcare systems but also prevent market failures and the huge costs that come with it.

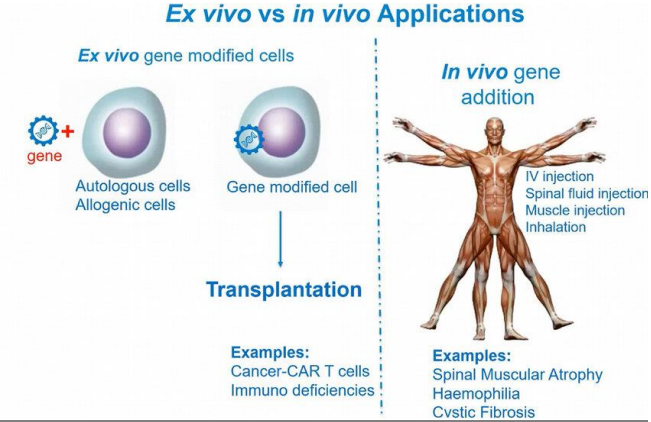
ATMPs: personalized therapy for ageing society and individual disease

In a global growing and ageing population, one in three people will develop cancer at some point in their life. There are currently 200 types of cancer, with 20m cases and 10m deaths worldwide every year. The economic burden of cancer treatment is equal to 25% of total global healthcare spend, with many adverse drug reactions affecting 50% of cancer patients and only one in four cancer patients responding to traditional therapy. However, survival rate has increased 2x since 1970s primarily due to 1) prevention; 2) earlier diagnosis and screening; and 3) better treatment and innovative medicines (personalized medicines/ATMPs).

In recent years, there has been a growing movement towards personalized medicines whereby rather than having one treatment fits all, treatments are tailored to the patient rather than to the disease. This approach can take different forms such as immunotherapy, gene therapy, small-molecule inhibitors and the like.

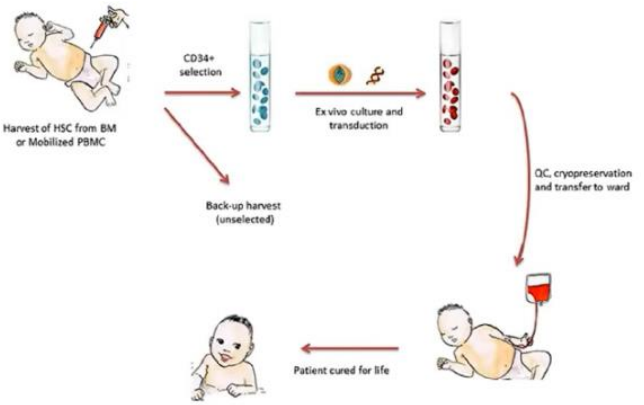
In the case of immunotherapy, the disease is treated with substances that stimulate or suppress the immune response to fight cancer. Immunotherapies are divided into: 1) Cancer vaccines; 2) Oncolytic virus therapies; 3) Cytokine therapies; 4) Immune checkpoint inhibitors; and 5) Adoptive cell transfer (e.g. CAR-T). The advantages of such therapies are that they can provide long-lasting responses, fewer side effects and improved efficiency than traditional therapies other than a more precise targeted action. However, there are still side effects associated with immunotherapies, and some treatments can be really expensive.

Exhibit 12: In vivo vs ex vivo gene therapies



Sources: Federation of American Societies for Experimental Biology

Exhibit 13: Ex vivo Strimvelis gene therapy manufacturing process



Sources: Federation of American Societies for Experimental Biology

Ex Vivo vs In Vivo applications

The difference between ex vivo and in vivo applications.

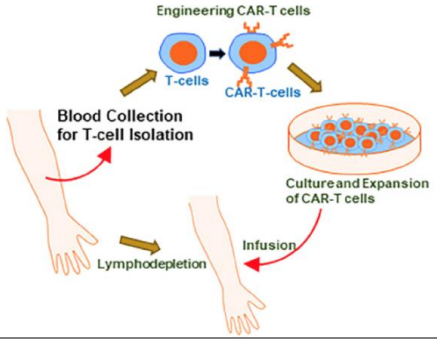
Ex Vivo: In “ex vivo” autologous (from the same donor) or allogeneic (from different donors), the cells are taken out of the body (mostly from the bone marrow), engineered in petri dishes and then the gene-modified cells are transplanted back into the patients. In immunodeficiencies, technologies such as CAR-T cells are typical examples.

In Vivo: On the other hand, in vivo gene addition is characterized by the injection of gene therapy agents directly into the body through intravenous injection (IV), spinal fluid injection, muscle injection or inhalation. Diseases treated with this approach are, for example, hemophilia, cystic fibrosis and spinal muscular atrophy (SMA). The gene transfer agents are typically viral vectors such as adenovirus, lentivirus or adeno-associated virus (AAV) but also non-viral vectors such as lipid, mRNA and the like. Viral vectors are engineered to be safe and not replicative through the removal of key genetic information so that diseases are not triggered by these viral vector

CAR-T Cell therapies: a successful ATMP case, commercially

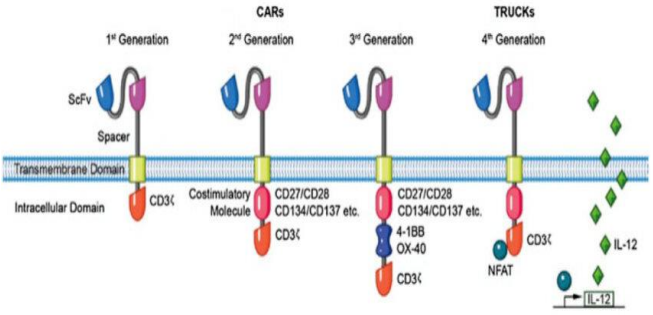
Among immunotherapies, CAR-T cells ATMP treatment has revolutionized the outcomes for haematological malignancies, with 90% response in otherwise incurable diseases. Autologous CAR-T requires the collection of T cells from the same donor by apheresis, followed by the introduction of the CAR encoding sequences and the ex vivo expansion of the resulting CAR-T cells that are then infused back into the same patient.

Exhibit 14: Chimeric antigen receptor T-cell (CAR-T Cell) manufacturing process



Sources: Federation of American Societies for Experimental Biology

Exhibit 15: Chimeric antigen receptors' architecture



Sources: Federation of American Societies for Experimental Biology

Global market valuation and growth forecasts

The market for ATMPs is undergoing an explosive expansion phase. The global market size was estimated at USD35.98b in 2024 and is expected to increase substantially to USD42.04b in 2025. Long-range forecasts predict this rapid growth will culminate in a market valuation of approximately USD170.47b by 2034. This expansion is attributed to a CAGR of 16.83% over the 2025 to 2034 forecast period and is fueled by the escalating demand for innovative, personalized treatments targeting chronic and rare diseases.

North America currently holds the undisputed leadership position in the market. The North American segment surpassed USD17.63b in 2024 and is projected to maintain a strong growth trajectory, expanding at a CAGR of 16.92% during the forecast period, making it the dominating region.

Thailand could emerge as an ATMP hub. However, forward-looking commercial strategy must account for the rapid geopolitical shift in growth drivers. The Asia-Pacific region is unequivocally identified as the fastest-growing geographical segment. This structural shift suggests that while initial revenue generation remains concentrated in established Western markets, future market share gains and long-term volume expansion will increasingly rely on successful penetration and localization efforts within APAC.

Exhibit 16: Global ATMP market metrics and growth projections

(USD b)	2024 value	2025 value	2034E	CAGR (2025E-34E)
ATMP market size				
Global	35.98	42.04	170.47	16.83
North America	17.63	17.63	na	16.92
Dominant region	North America	North America	North America	
Fastest growing region	Asia Pacific	Asia Pacific	Asia Pacific	

Sources: European Medicines Agency (EMA); Precedence Research

Cell therapy is projected to grow faster than ATMP market

The global cell therapy market size was USD5.88b in 2024 and is expected to reach around USD44.39b by 2034, expanding at a CAGR of 22.69% in 2025-34, higher than ATMP market growth projection at 16.83% CAGR in 2025-32. The growth of the cell therapy market is driven by the increase in investments in research and development and advancements in biotechnology.

The cell therapy market has been experiencing significant growth due to the rising awareness about the benefits of cell therapies. They help regenerate damaged tissues and organs and hence have the potential to treat a range of conditions, such as cancer, autoimmune diseases, infectious diseases, urinary issues, spinal cord injuries, joint cartilage damage, immune system weakness, and neurological disorders.

Cell therapies target only damaged tissues, reducing the chances of getting damage to other tissues. Numerous cell types are used as part of a therapy or treatment for various illnesses. The demand for cellular therapy is increasing rapidly, contributing to the growth of the market. Transplanting human cells to replace or repair damaged tissue and/or cells is known as cellular therapy (CT). Cell therapies enhance patient outcomes due to their fewer side effects.

Major trends in the cell therapy market

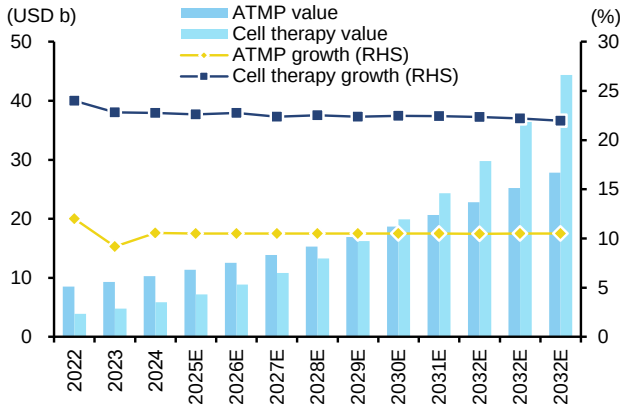
Demand for regenerative medicine: Patients with untreated illnesses and disorders are rapidly shifting toward regenerative medicine due to its ability to restore the functions of tissues or organs lost due to disease and injuries. Regenerative therapies can be tailored to individual patient needs. This personalization further improves treatment outcomes.

Rising prevalence of chronic diseases: The prevalence of chronic diseases, such as cancer, diabetes, and CVDs, is rising across the globe, which is a key factor boosting the demand for cell-based therapies. These therapies offer innovative treatment options to manage these conditions and provide long-term benefits. In addition, the rising investments in the development of targeted therapies to treat chronic diseases further contribute to market expansion.

Advancements in technology: Technological advancements significantly boost the growth of the market. Innovations in technologies like gene editing, gene modification, and viral vectors are enhancing the effectiveness of cell therapies. These technologies further accelerate the production of cell therapies and reduce production costs.

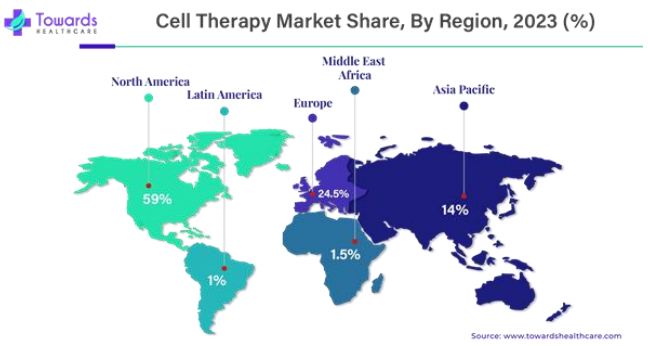
Increasing government support: Increasing government initiatives to support stem cell research through federal funding is considered particularly important in cell therapy. Governments of various nations are establishing programs and providing funding to accelerate the development of cell-based therapies. Furthermore, rising initiatives by regulatory bodies and other research organizations to promote stem cell therapies influence the market.

Exhibit 17: Growths in ATMP overall vs Cell therapy



Sources: EMA

Exhibit 18: Cell therapy market share, by region in 2023



Sources: TowardHealthcare

Many investments have been poured in to cell therapy

- December 2023: The Department of Biotechnology's independent Institute for Stem Cell Science and Regenerative Medicine (DBT-inStem) announced the start of a cutting-edge research project supported by the Bill and Melinda Gates Foundation. The project's goal is to create stem cell-based organoid models that will help de-risk targets and create new programs by generating reagents for the Gates Foundation's NHC (Non-Hormonal Contraceptive) initiative.
- February 2024, AstraZeneca spent USD300m on a state-of-the-art facility in Rockville, Maryland, to introduce its life-saving cell therapy platforms in the U.S. for crucial cancer trials.
- The Indian government set up a National Apex Committee for Stem Cell Research and Therapy (NAC-SCRT) to oversee stem cell research and therapy.
- China has recently updated its policy on clinical studies of cell therapy and already started implementing several regulations to create appropriate regulatory frameworks that support the development of cell therapy products.

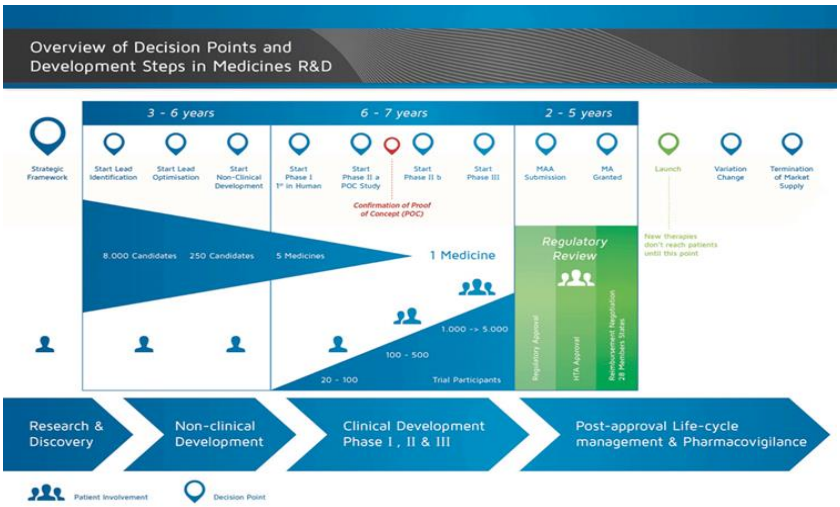
Competitive landscape and pipeline strategy

The commercial success of ATMPs has been decisively validated by the emergence of "blockbuster" products, defined as those achieving USD1b or more in annual sales. These products have proved and further underscored the high-value commercial viability of the ATMP sector.

Key proven successfully commercial examples include:

- Yescarta (axicabtagene ciloleucel, Gilead Sciences/Kite Pharma), a CAR T-cell therapy that generated USD1.6b in global sales in 2024
- Zolgensma (onasemnogene abeparvovec-xioi, Novartis), a gene therapy for spinal muscular atrophy (SMA), which posted USD1.2b in 2024 sales
- Novartis' Kymriah (USD443m in 2024)
- Gilead's Tecartus (USD403m in 2024)

Exhibit 19: Development phases from R&D to registered medicine



Sources: EUPATI

Major pharmaceutical firms already jump into ATMP bandwagon. The industry's confidence in this segment is clearly reflected in strategic corporate actions. Major pharmaceutical companies are actively integrating advanced therapy platforms—gene and cell therapy—as core pillars for future growth.

The year 2025 witnessed significant strategic consolidation through mergers and acquisitions (M&A), with **major players like Merck KGaA, Sanofi, Lilly, and Novartis** executing deals worth billions of dollars to acquire innovative pipelines and technological platforms. This M&A activity, coupled with the impressive revenue figures, reinforces the conclusion that **ATMPs have transitioned beyond a niche research domain into a high-value commercial segment.**

This validation, however, is currently concentrated among specific, high-performing products developed by large, financially established entities. This points toward the reality that while the overall CAGR is high, market entry and sustained success require immense resources to overcome the manufacturing and market access hurdles inherent to these therapies.

Therefore, successful commercial expansion favors companies capable of either securing breakthrough mechanisms or integrating quickly via strategic partnerships or acquisition by one of the dominant firms. Pipeline investments currently prioritize recombinant adeno-associated virus (rAAV) precision-targeting gene therapies focused on treating single gene defect diseases, such as hemophilia and Duchenne muscular dystrophy (DMD). This focus leverages the clinical rationale for high prices while aligning with existing expedited regulatory pathways.

For Thailand, MEDEZE, as a first-mover in ATMPs specializing in the cell therapy, is now entering the “clinical trial” phase, a procedure critical to be registered as a medicine for treatment. Given MEDEZE has been conducting hundreds of cases for stem cell in human for over a decade, the clinical development phase is now shortened to the phase II/III, meaning that MEDEZE could complete its clinical trail phase for the stem cell as ATMP in less than one year.

Exhibit 20: Global clinical trial cases

Location	Number of Registered Studies and Percentage of Total (as of 10 October 2025)	
	(cases)	(%)
U.S. only	161,348	29
Non-U.S. only	313,389	56
Both U.S. and non-U.S.	24,764	4
Not provided	56,840	10
Total	**556,341**	**100**

Sources: National Library of Medicine; National Center for Biotechnology Information

Critical commercial barriers to public acceptance

The defining challenge inhibiting the “normalization of ATMPs” is the complex interplay between their manufacturing intricacy, resulting financial burden, and the limitations of traditional healthcare reimbursement structures.

Obstacle#1: Manufacturing complexity, variability, and cost

The inherent complexity of ATMP production creates significant commercial friction. Treatment costs are exceptionally high, reaching up to USD2m per patient in certain cases. This staggering initial cost immediately impacts national budgets and payer willingness.

Manufacturing processes are complex, laborious, and demand rigorous standardization. A major difficulty lies in managing the significant biological variability of cells derived from patients or donors, which affects product quality, potency, and stability. Ensuring reproducible manufacturing processes that can accommodate this variability requires the implementation of highly standardized cell characterization and quality control assays.

Furthermore, there is a pronounced operational disconnect between early-stage academic development and the commercial requirement for current Good Manufacturing Practices (GMP)-compliant production. Scaling up manufacturing capacity for ATMPs carries substantial financial risk, especially when processes often change significantly between initial concept and commercialization to improve feasibility.

To mitigate these delays, the introduction of an intermediate "pre-GMP" environment is viewed as a strategic necessity. This environment allows for process development and optimization—a "manufacturing fitness room"—before the costly transfer to full GMP suites, which can significantly accelerate the pace of development toward clinical use. Operationally, successful production also demands robust, integrated logistics solutions and specialized on-site capabilities, such as freezing and thawing expertise.

Obstacle#2: Health economics and innovative reimbursement models (P&R)

The high, single-treatment cost necessitates a paradigm shift in health economics. Traditional fee-for-service models are fiscally untenable for therapies priced at USD1m or more. This reality has inspired the development of alternative reimbursement structures, specifically outcome-based spread payments.

Strategic solutions aim to mitigate the financial risk for payers by spreading the cost over several years (amortized or annuity payment plans) and tying installments to the achievement of defined therapeutic performance milestones. However, the practical implementation of these innovative Pricing and Reimbursement (P&R) models faces formidable structural barriers within European and other global healthcare systems. Key among these barriers is the difficulty in reconciling long-term payment plans with rigid 12-month public health budget cycles and potential conflicts with international accounting rules.

Moreover, outcome-based payments require long-term, continuous data collection to verify performance. This process is hampered by the administrative burden of gathering additional real-world data and the current lack of clear governance structures to oversee these long-term arrangements.

Exhibit 21: Key development events in cell therapy worldwide

Date	Industry development
Nov-24	The University of Texas MD Anderson Cancer Center opens Institute for Cell Therapy Discovery & Innovation
Jul-24	Bioserve India launched its advanced stem cell products in India with new products from REPROCELL aiming to support innovation in scientific drug R&D, regenerative medicine and therapeutic discovery
Mar-24	Bristol Myers Squibb announced that the U.S. FDA approved Breyanzi (lisocabtagene maraleucel; liso-cel), a CD19-directed chimeric antigen receptor (CAR) T cell therapy, for the treatment of adult patients with relapsed or refractory chronic lymphocytic leukemia (CLL) or small lymphocytic lymphoma (SLL).
Feb-24	AstraZeneca spent USD300m building facility in Rockville, Maryland for life-saving cell therapy platforms in the U.S.
Dec-23	the U.S. FDA approved two autologous gene therapy products, Lyfgenia (lovotibeglogene autotemcel by bluebird bio) and Casgevy (exagamglogene autotemcel by Vertex Pharmaceuticals), for the treatment of individuals with sickle cell.
Dec-23	U.S. Department of Biotechnology's independent Institute for Stem Cell Science and Regenerative Medicine (DBT-inStem) announced the start of a cutting-edge research project supported by the Bill and Melinda Gates Foundation.

Sources: WHO; EMA

Critically, the successful deployment of innovative P&R models is fundamentally dependent on solving the operational challenges of clinical integration. Outcome-based reimbursement requires robust data infrastructure to track long-term patient follow-up data. This mirrors the highly specialized operational infrastructure required for clinical integration, which includes integrated logistics, skilled staff, and data systems for traceability.

Therefore, building advanced clinical data registries and integrated logistics systems is not merely a clinical necessity, but an essential commercial prerequisite for securing favorable, sustainable reimbursement terms. Failure to establish these systems undermines the financial models designed to make ATMPs affordable, potentially stalling normalization efforts. Consequently, access to ATMPs remains uneven globally, stemming from divergent assessment processes utilized by payers and varying regulatory requirements.

Regulatory acceleration and market access speed

Regulators globally have proactively established specialized pathways to expedite the approval and patient access of ATMPs, particularly those targeting critical unmet medical needs. This demonstrates a global regulatory consensus that standard development timelines are insufficient for these innovative treatments.

Regulatory frameworks: US, EU, China, and Japan

The major global markets—the U.S., Europe, China, and Japan—all employ similar strategies based on conditional or accelerated approval, which grants market authorization with reduced initial clinical data, contingent upon robust post-market data collection.

These expedited mechanisms directly translate into faster market entry. In the EU, ATMPs granted Priority Medicines (PRIME) designation achieved a median approval timeline of 376 days, which represents a substantial acceleration compared to the median of 669 days for those without PRIME status. Overall, conditional approvals often demonstrate the shortest time from procedure initiation to final decision, underscoring their strategic importance.

Exhibit 22: Comparisons of regulatory requirements by region

Region	Agency	Key expedited mechanism	Standard approval review time	Expedited review time	Key feature/conditionality
U.S.	FDA	Accelerated approval, breakthrough designation	10 +/- 2.8 months	na	Approval contingent on post-market data verification, allows earlier
EU	EMA	PRIME designation (conditional approval)	669 days (non-PRIME)	376 days (PRIME)	Significant acceleration of review time; requires re-evaluation and ongoing data submission
Japan	PMDA	SAKIGAKE (conditional & time-limited)	15 +/- 6.0 months	Shorter than EU	Allows approval based on predicted efficacy from limited patients; requires application for regular approval within 7 days
China	NMPA	Priority review pathway, conditional approval	na	Accelerated	Improved review process using effective pre-Investigational New Drug (IND) meetings to facilitate early

Sources: FDA; EMA; PMDA; NMPA; WHO

Regulatory strategy and commercial planning

The existence of highly specialized, conditional approval frameworks across all major markets signifies that regulators accept that the standard Randomized Controlled Trial (RCT) evidence paradigm must be adapted for ATMPs targeting rare, life-threatening diseases. This global convergence simplifies the initial clinical strategy by reducing the necessary volume of data for market entry.

However, this acceleration shifts the regulatory burden downstream. The challenge transforms from achieving initial efficacy data to fulfilling rigorous post-market requirements (PMRs) necessary to convert conditional status to full approval.

Japan's regulatory framework, leveraging SAKIGAKE (Forerunner designation) and Conditional and Time-limited Approval for regenerative medicine products, exemplifies this trade-off. Japan allows approval based on predicted efficacy from limited patient data, offering a pathway for early commercialization. However, this conditional approval carries a critical commercial deadline: manufacturers must apply for regular, full approval within a date specified at the time of conditional authorization (typically within seven years, extendable by up to three years). This necessitates a highly structured and financially committed program for long-term patient data surveillance.

Similarly, China's National Medical Products Administration (NMPA) is strategically accelerating ATMP development through multiple programs, including Breakthrough Therapy Designation and Conditional Approval. The NMPA's proactive approach, which includes early communication via pre-IND meetings, streamlines the entire development pathway. This government-backed commitment to innovative therapies is a major factor driving the Asia-Pacific region's forecast as the fastest growth engine.

Regional market readiness and acceptance

ATMPs currently are in different stages in each region, with the U.S. leading the development and applications. Yet other regions are now catching fast with the U.S. as ATMPs are not only strategically competitive but also economically critical for each country to retain their healthcare system as the healthcare burdens are increasingly coming close to financial collapses due to the growing ageing society.

U.S.: Maturity and decentralization challenges

The US represents the largest and most mature ATMP market by revenue. Physician acceptance is notably high, with 82% of surveyed healthcare professionals expressing comfort with referring eligible patients for cell or gene therapy, particularly CAR T-cell therapy. This high clinical comfort demonstrates widespread acceptance of the therapeutic potential.

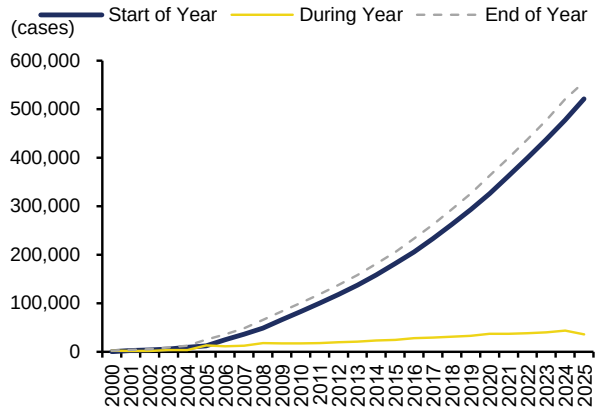
However, clinical adoption is significantly hampered by the decentralized nature of the US health system and the specialization required for administration. Normalization requires the seamless integration of ATMPs into routine practice. Currently, only 37% of surveyed physicians report having a formal, structured process for referring patients from community settings to specialized, administering institutions. This vast gap between clinical willingness and operational capability constitutes the primary normalization bottleneck in the US. Commercial success requires investing in solutions that standardize the referral and logistical workflow, moving ATMPs beyond an exclusive domain of tertiary care centers.

Europe (EU): HTA Fragmentation and Budget Pressure

Market access across Europe is characterized by fragmentation. While the European Union (EU) authorizes ATMPs centrally (19 products by October 2022), subsequent access at the national level is uneven due to divergent Health Technology Assessment (HTA) criteria and payer decisions among member states.

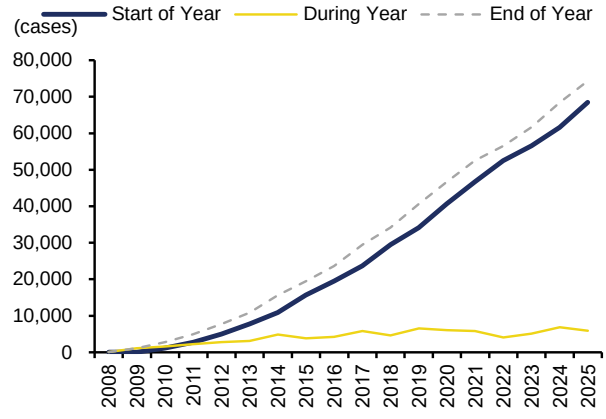
European HTA bodies systematically evaluate the value-for-money of medicines. Their ability to influence negotiated prices is directly proportional to the nation's specific health system funding model. Consequently, Europe serves as a crucial testing ground for advanced reimbursement mechanisms like outcome-based spread payments, specifically designed to alleviate the initial budget impact of high-cost therapies. The core normalization challenge in the EU is achieving political and economic alignment across numerous national HTA bodies to reconcile long-term payment structures with restrictive annual public budget cycles.

Exhibit 23: Number of registered studies by year (as of 10 October 2025)



Sources: FDA; EMA; WHO

Exhibit 24: Number of registered studies with posted results by year (as of 10 October 2025)



Sources: FDA; EMA; WHO

China and Japan: Accelerated P&R Innovation to capitalize on ATMP wave

China and Japan are strategically positioned to capitalize on the ATMP wave, driven by a combination of regulatory speed and innovative financial models.

In China, the NMPA's accelerated regulatory programs ensure that innovative therapies can reach the market quickly. Crucially, both China and Japan have already established critical precedents for reimbursing ATMP blockbusters such as Kymriah and Zolgensma. These markets utilize sophisticated, performance-based risk-sharing agreements (RSAs), expenditure caps, and prior approval mechanisms. For example, Zolgensma and Kymriah are reimbursed in certain Asian countries based on a percentage of the average price referenced across major Western countries.

This deployment of innovative risk-sharing mechanisms indicates a unique divergence from the West. While European and US markets struggle with the theoretical and accounting hurdles of implementing spread payments within existing governmental financial structures, key Asian payers have demonstrated a proactive willingness to implement functional, performance-contingent financial models. This advanced approach to risk management, coupled with rapid regulatory streamlining, solidifies the Asia-Pacific region's role as the fastest-growing major ATMP market. Japan's 7-year conditional approval window demands intense, sustained investment in post-market surveillance to achieve full normalization.

Exhibit 25: Regional ATMP market maturity and acceptance barriers

Region	Primary regulatory/ P&R hurdle	Reimbursement model trend	Infrastructure readiness	Normalization bottleneck
U.S.	Payer negotiation friction; decentralized payment	Fee-for-Service/ Outcome-based	High, specialized centers only	Standardizing clinical referral and logistics
EU	HTA divergence; alignment of spread payments with 12-month period	Outcome-based spread payments	Moderate-High (varies significantly by country)	Political/ Economic consensus across multiple national
Japan	Converting 7-year conditional approval to regular approval	Performance-based schemes/ RSAs	High	Sustained, complex post-market data collection infrastructure
China	Ensuring local GMP compliance and long-term data collection	Performance-based schemes/ Expenditure caps	Rapidly evolving	Scaling manufacturing Quality Control and regulatory oversight
Thailand	Policy fragmentation; absence of clear coverage pathways; underfunding	Nascent/Unclear	Low (dependent on technology import)	Establishing foundational specialized infrastructure and regulatory policy

Sources: FDA; EMA; WHO

Thailand: Nascent market with high structural barriers

Thailand currently presents significant commercialization friction due to the nascent stage of its advanced health biotechnology sector. The policy environment is fragmented, characterized by underfunding R&D, a lack of incentives for the private sector, and, most critically, an absence of clear coverage pathways for advanced therapies.

The current regulatory framework, overseen by the Thai FDA, lacks specific ATMP definitions and pathways, requiring new therapies to navigate the standard Drug Act requirements. This contributes to protracted registration timelines, which can take six months to two years, particularly for innovator drugs.

Furthermore, domestic R&D is constrained by high costs—a Phase III study can hover around USD21.4m—and extended development duration stemming from limited local expertise.

Thailand is primarily categorized as a **"technology-recipient country".** Normalization hinges on the successful establishment of a comprehensive national strategic plan, harmonized reimbursement across public health schemes, and necessary governmental investment in foundational specialized infrastructure.

Clinical Adoption and Operational Normalization Timeline

The timeline for ATMPs to become a common, or "normal," treatment for diseases is fundamentally dictated by industrial maturity and operational integration, rather than solely by clinical efficacy. We think this is the most critical step for MEDEZE to turn its expertise in stem cell as treatment for rare to common diseases under the successful medicine registration procedure.

Barriers to clinical integration and supply chain requirements

Clinical acceptance, as demonstrated by the high physician comfort level in the US, is only the first step. True normalization requires embedding ATMPs into standard clinical practice, which depends heavily on operational readiness. Specialized infrastructure is mandatory: this includes fully traceable supply chains, dedicated procurement capabilities, integrated logistics solutions, and specialized on-site freezing and thawing equipment.

Moreover, the successful clinical adoption of Cell and Gene Therapy (CGT) products necessitates a highly skilled and trained workforce. The medical team's capacity to safely perform these services, supported by roles such as hospital pharmacists in ensuring appropriate use, defines the boundaries of accessible treatment.

The Clinical Flow Bottleneck

The data reveals a significant operational bottleneck: clinical willingness far outpaces systemic capability. For CAR T-cell therapy, while 82% of physicians are comfortable with referrals, only 37% reported having a formal, structured process for making those referrals. This gap is not a deficit of belief in the medicine but a systemic failure to formalize the complicated logistics necessary to move a patient from a community setting to a specialized tertiary care institution.

This lack of standardized clinical flow restricts access to a limited number of high-capacity centers. Consequently, ATMPs remain niche treatments, dependent on laborious, case-by-case coordination. Normalization, therefore, requires industry stakeholders to prioritize standardization of these referral and logistical protocols across a broader network, enabling integration into mainstream clinical workflows.

Expert projections on normalization: Timeline to First-Line Therapy Status

While regulatory mechanisms, such as the EU's PRIME designation, have significantly accelerated review timelines (median approval in 376 days), the rate-limiting steps for normalization reside in economics and infrastructure. The challenges of scaling up GMP manufacturing, resolving the USD2m cost barrier, and establishing globally consistent outcome-based P&R models cannot be resolved quickly.

The pace of normalization is determined by industrial engineering, not clinical science. For those current, specialized indications targeting rare diseases where no effective alternative exists, ATMPs are already de facto primary treatments under conditional approval frameworks.

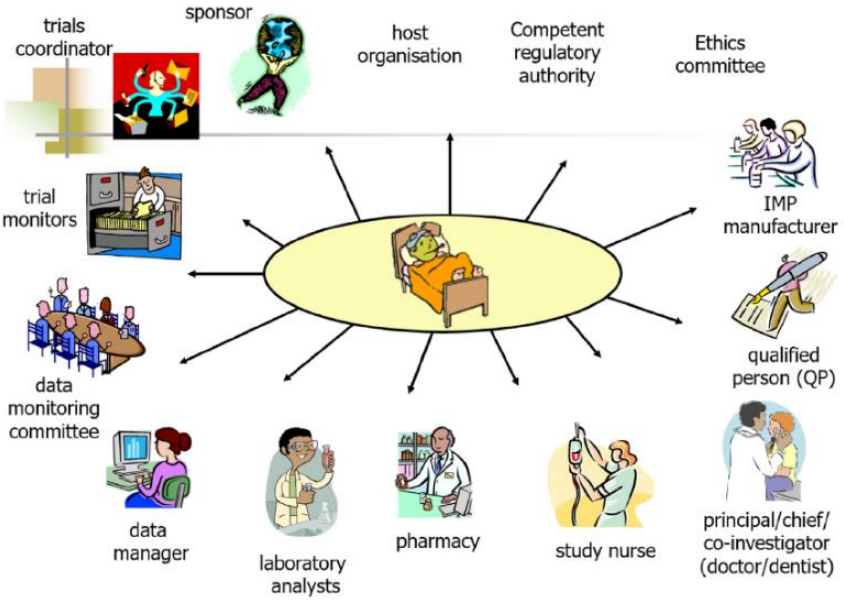
However, the transition of ATMPs into standard, first-line treatments that broadly displace established therapies for a wider range of chronic and common diseases is a longer-term endeavor. Based on the necessary timeline for industrial capacity scale-up, global regulatory harmonization of post-market requirements, and the successful implementation of sustainable P&R models, the normalization horizon for key initial indications is projected to be 5 to 10 years (2030-2035). Broader adoption, encompassing common chronic conditions, will require further technological breakthroughs that substantially reduce the fundamental manufacturing complexity and cost.

ATMP Commercialization Analysis

Great growth opportunity

ATMPs hold a great promise in treating many diseases. Worldwide, 95% of rare "orphan" diseases have no drug treatment, and there are 7,000 different types of rare diseases and disorders. As such, the orphan disease indications are driving up costs and competition, with global pharmaceutical spending up to USD1tr and 1.3% of global GDP. Current traditional treatments are not effective, with only 30-70% of patients responding to drugs.

Exhibit 26: Stakeholders' involvement in the clinical trial process



Sources: Federation of American Societies for Experimental Biology

But ATMP's cost still outweighs benefits in global markets

Considering the costs necessary to make a drug available following the different clinical trial phases, which on average last 10–15 years, it is no surprise that the return on investment (ROI) in pharma R&D is on the brink of terminal decline.

The more the standard of care is improved, the more difficult and costly it becomes to improve further, so we spend more to get diminishing incremental benefits and added value for patients with a declining ROI, which is directly linked to growth. Since this pharma business model is broken, alternative models have to be proposed with a shift towards more disruptive innovation whereby tissue engineering and regenerative medicine, as anticipated, could be the next big thing.

Thailand's ATMP: racing against time to triumph

Despite a "technology-recipient" country for healthcare products, Thailand is now ready to advance its ATMP in an expressway, considering that Thai regulator the Medicines Regulation Division (MRD) under the Food and Drug Administration, has already issued a number of regulations required for ATMPs, effectively making ATMP products, providing that they successfully receive permits based on required clinical trials, could be granted green lights for ATMP products to be registered as a medicine for treatment.

Five key ATMP regulations and guidelines have already been issued and legalized, including guidelines for cell therapy ATMP and gene therapy ATMP to be registered as medicine, guidelines for conditional ATMP approval, standards for R&D to be used as a required component for ATMP to be registered as a medicine, and classification for ATMPs.

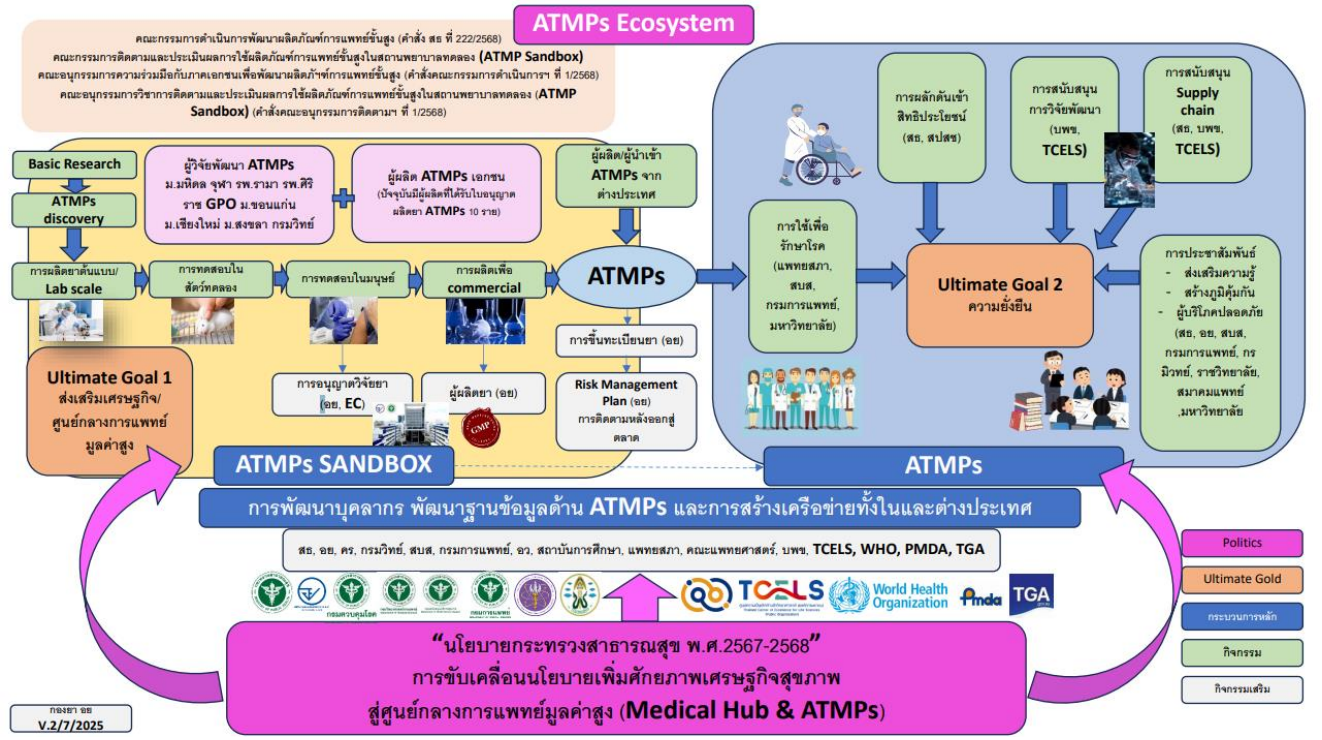
Exhibit 27: Five key ATMP regulations approved and legalized by FDA

	Date legalized	Date announced	Regulations
1	28-Nov-18	10-May-18	Guidelines for cell therapy ATMP to be registered as medicine
2	26-Jan-23	16-Jan-23	Guidelines for gene therapy ATMP to be registered as medicine
3	24-Oct-24	24-Oct-24	Guidelines for conditional ATMP approval
4	24-Jan-25	08-Jan-25	Standards for R&D to be deployed to meet requirements for medicine registration
5	25-Jan-25	03-Feb-25	Classification of ATMPs

Sources: FDA

Establishing ATMPs ecosystem. MRD has also established a clear framework for the ATMP ecosystem, comprising 1) R&D and researchers (mostly state agencies and hospitals); 2) 10 approved ATMP producers (private and state organizations), and importers and foreign producers (foreign pharmaceutical companies), all under the broad but clear government policies to promote Thailand as a medical hub and ATMP.

Exhibit 28: Thailand's ATMP ecosystem



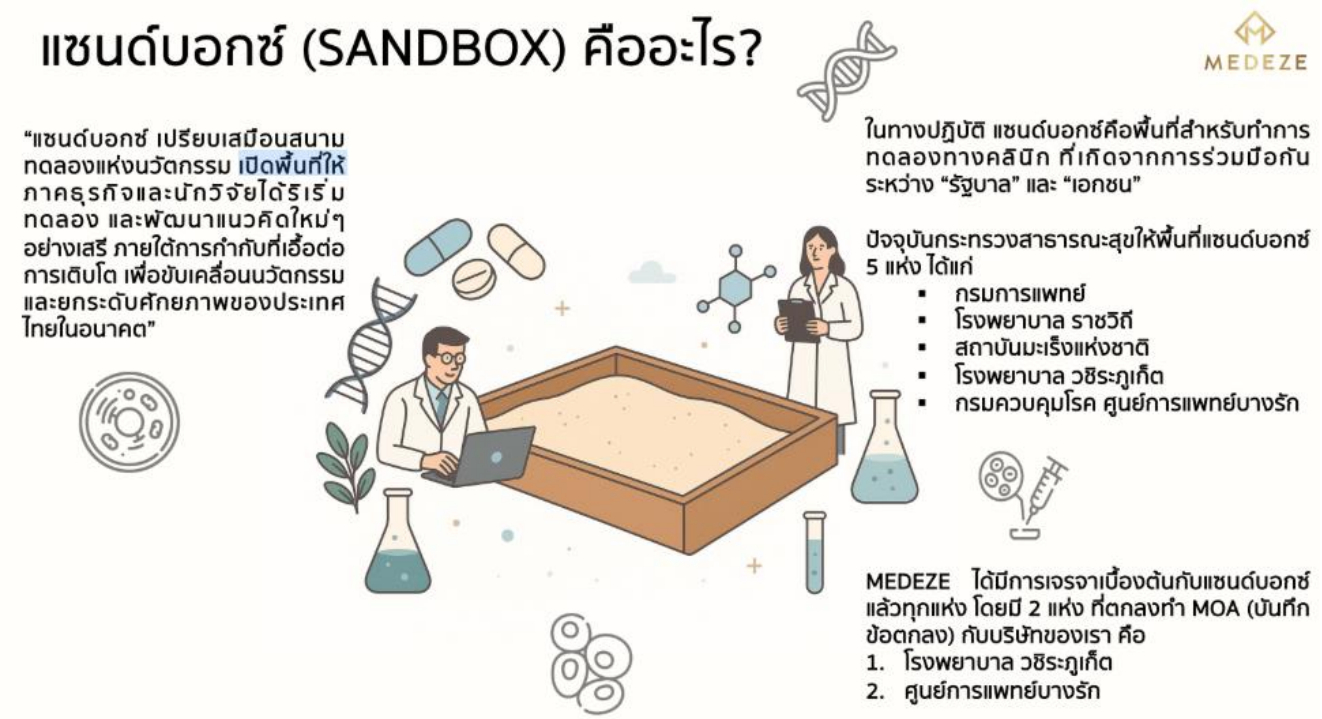
Sources: Medicines Regulation Division; FDA

Establishing ATMP sandbox. To accelerate the development and commercialization of ATMPs, Thai government also set up an ATMP sandbox as a pioneer project under the Ministry of Public Health in order to closely monitor and follow up the progress of ATMP development in each phase.

We highlight key strategic goals that confirm the ATMP expressway path

- **Goal#1: Approve at least 2 ATMP products in 2025-26**
- **Goal#2: Approve at least 5 healthcare hospitals to deploy ATMPs** (Vachira Hospital in Phuket, National Cancer Institute, Metta Pracharak Hospital in Nakorn Prathom, Rajprachasamasai Institute, Rajvithi Hospital)
- **Goal#3: Enable Thai patients who need ATMP treatment to gain access to ATMPs in Thailand within 2025** through the approvals of medicine R&D

Exhibit 29: ATMP sandbox

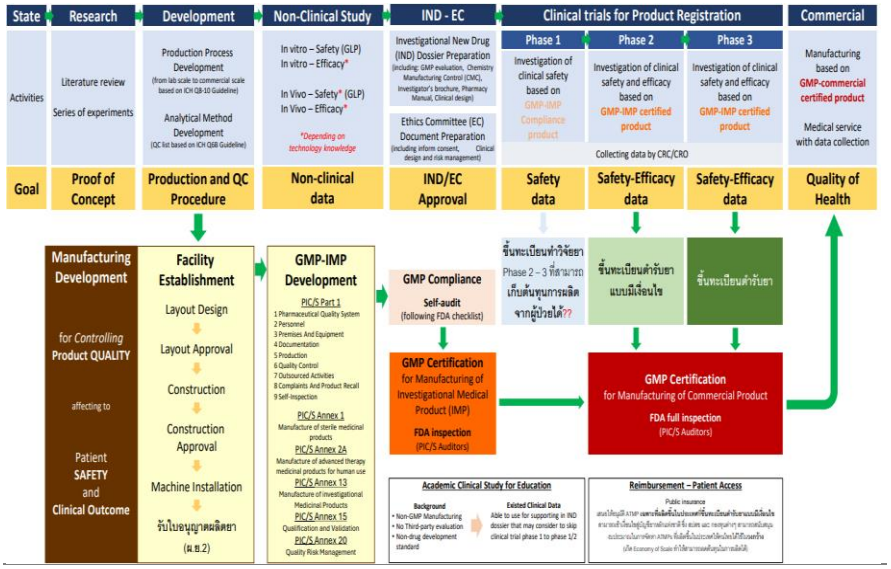


Sources: MEDEZE

In essence, Thai regulators have already

- **Establish guidelines, procedures, and regulations required for ATMPs** by three related organizations (FDA, The Medical Council of Thailand, Department of Health Service Support)
- **Develop and test ATMP products by setting up a new institute the National Advanced Medical Products Center (NAMPC)** with two main centers – 1) Advanced Medical Products Production and Quality Control Center of the Department of Medical Sciences to raise international standards for ATMPs and opportunities for treating complex diseases; and 2) the Center of Medical Excellence in Advanced Medical Products of Chulalongkorn Hospital, Thai Red Cross Society as a service center for ATMP
- **Targeted ATMP products to treat 4 diseases** of 1) acute kidney injury; 2) type 1 diabetes mellitus (T1DM); 3) Knee Osteoarthritis; and 4) hair transplantation
- **Establishing criteria for ATMP approvals** are 1) high chance of approval success rate; 2) low-risk ATMP products and autologous (own cell/gene)
- **Establishing the One-Stop service center** to accommodate and accelerate R&D and medicine approval process under the sandbox project
- **Subsidizing budget for ATMP sandbox**

Exhibit 30: ATMP product development process from R&D to commercialization



Sources: FDA

Exhibit 31: Sandbox #1 at Bangrak, Bangkok

Sources: MEDEZE

Exhibit 32: Sandbox #2 hospital in Phuket

Sources: MEDEZE

MEDEZE: a leapfrog step in Thailand's ATMP

Having operating stem cell business to serve hundreds of patients in Thailand for over a decade since 2010, MEDEZE has timely captured the growth opportunity in Thailand's fast-forward ATMP development from R&D to commercialization phase, thanks to Thai government's determined goal to deploy ATMP as one of medicines for treating diseases that not only has seen their cases grow exponentially but also currently demand costly healthcare expenses.

To make ATMP easier to be registered as a medicine, Thai FDA has allowed ATMP to pass only two clinical trial phase, rather normal four phases, in order to be granted medicine registration and marketed to healthcare institutions nationwide.

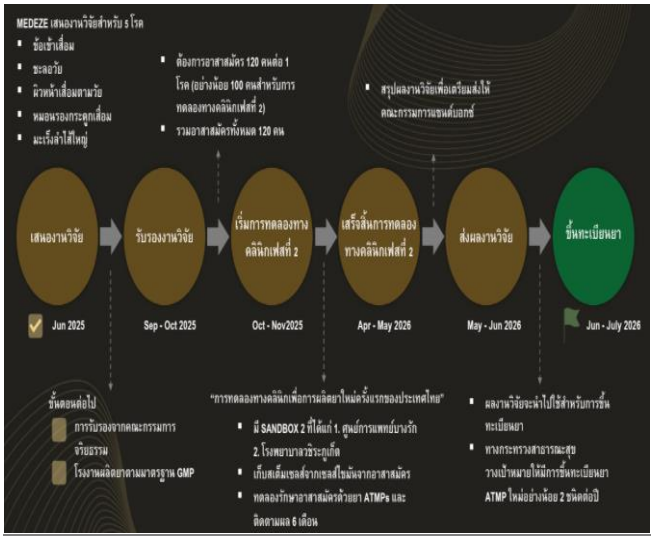
Exhibit 33: Thai regulator approved one ATMP medicine (imported) and three ATMP R&Ds

Approval date	ATMPs	Conditions	Name of licensee
18-Mar-25	ITL-2001-CL-311	No	
08-Apr-25	HGI-001-C01	No	
24-Apr-23	GNPT-CP-001.00	Conditional approval	
22-Mar-23	ZOLGENSMA	Gene therapy ATMP using gene vector type Adeno-Associated Virus (AAV) to treat Spinal Muscular Atrophy (SMA) in children	Novartis

Sources: FDA

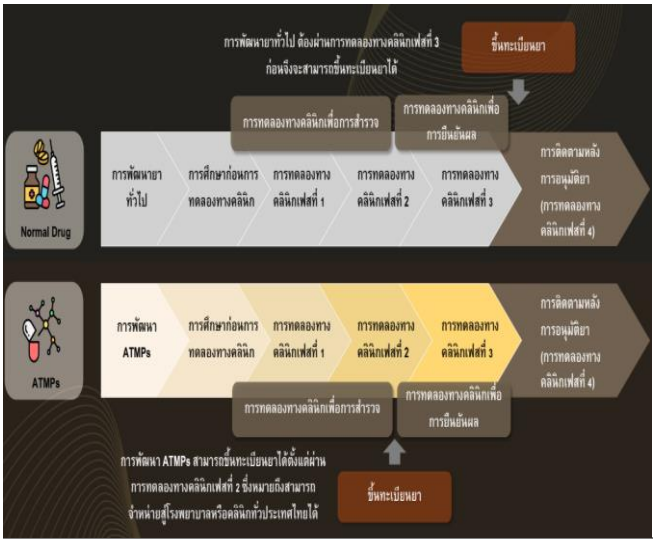
MEDEZE's stem cell therapy ATMP to be registered as a medicine in 2H26E. we project MEDEZE's stem cell therapy ATMP to be registered as a medicine by 4Q26, passing the 6 to 9-month clinical phase period by Sep or Oct-2026 before being registered as a medicine and then to be marketed to hospitals nationwide.

Exhibit 34: MEDEZE's proposed stem cell therapy ATMP for five diseases



Sources: MEDEZE

Exhibit 35: Medicine development phase comparison: general medicines vs ATMP



Sources: MEDEZE

Approval success rate for MEDEZE's stem cell as medicine is high

Now the key question for investors would be **"Will MEDEZE's cell therapy ATMP be legally approved as a medicine by 4Q26?"**

We believe so with high convictions based on following reasons.

Reason#1: MEDEZE has already succeeded in laboratory trials for its stem cell therapy as a treatment over a decade and hence the required clinical trial phase 2 is likely to be a repeating procedure with higher number of patients involved and the designated hospitals and healthcare organizations as indicated by the Thai regulators.

Reason#2: MEDEZE's knee osteoarthritis is one of government's four target diseases for ATMPs. Among five diseases targeted by MEDEZE, at least one disease Knee Osteoarthritis is one of four initial diseases (acute kidney injury, type 1 diabetes mellitus (T1DM), knee osteoarthritis, hair transplantation). Hence, given the goals to approve at least 2 ATMPs in 2025-26, Thai patients to gain access to ATMPs in the sandbox within 2025, and MEDEZE's stem cell is one of ATMPs in Thai government's sandbox, we think the chances for MEDEZE's ATMP to be approved is very high.

Exhibit 36: MEDEZE's sandbox

Sources: MEDEZE

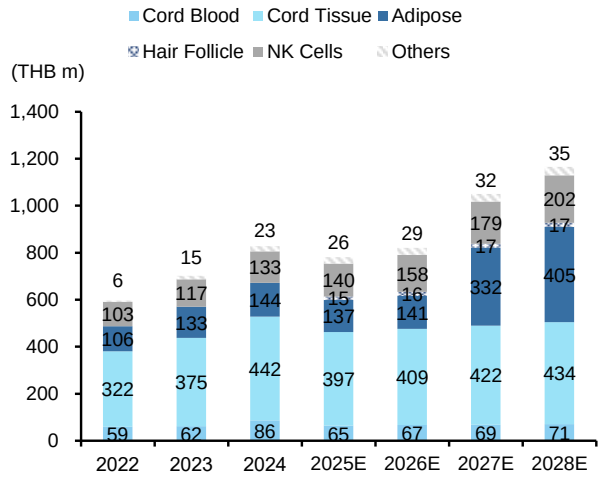
ATMP growth potentials are high

The next question will be **"How much upside for MEDEZE's stem cell ATMP once successfully registered a medicine?"**

Our straight answer will be the fast-growing revenue contributions to MEDEZE that will jump from THB29m in 2026 to THB287m in 2027 and THB711m in 2028 with the ATMP revenue portion for MEDEZE to surge from 3.0% of total revenue in 2026 to 19.8% in 2027 and 35.7% in 2028.

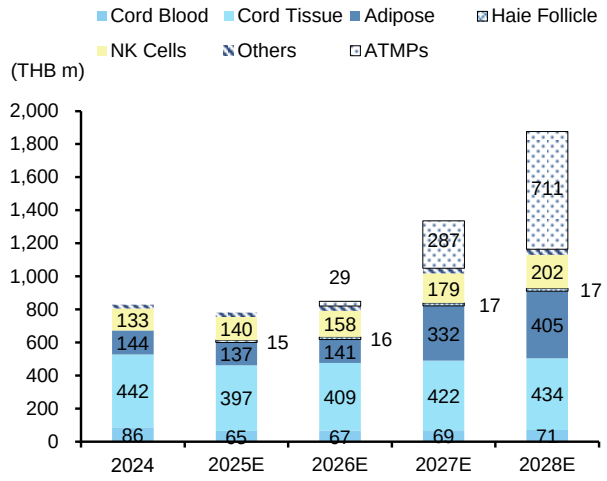
In 2022-24, MEDEZE generated revenue at THB0.6b-0.8b, coming from four existing business segments related to the stem cell - cord blood (9-10% of total revenue), cord tissue (53-54%), adipose (17-19%), hair follicle (0.2%), NK cells (16-17%), and others (1-3%).

Exhibit 37: Revenue projections without ATMPs



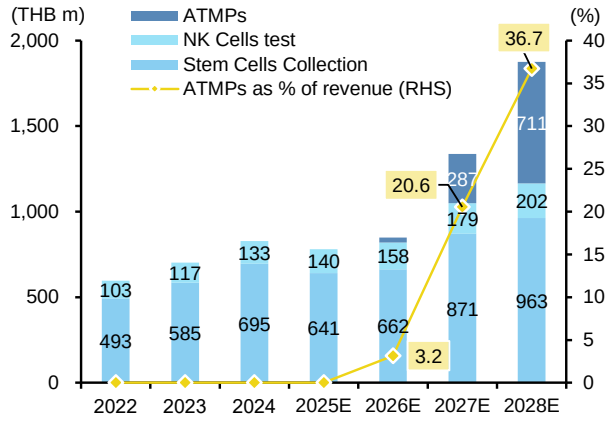
Sources: MEDEZE; Globlex Research

Exhibit 38: Revenue projections with ATMPs



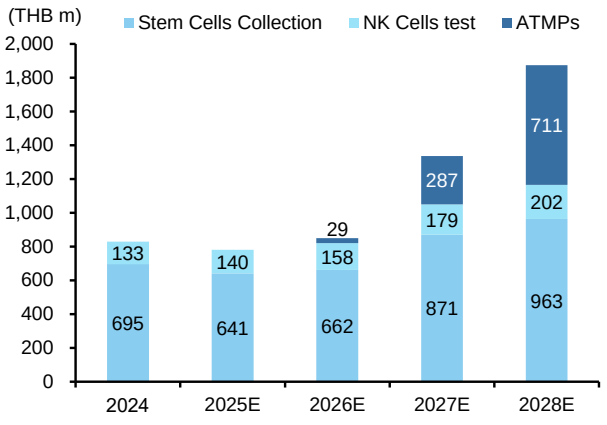
Sources: MEDEZE; Globlex Research

Exhibit 39: ATMP revenue as % of total revenue



Sources: MEDEZE; Globlex Research

Exhibit 40: Revenue breakdown by segment

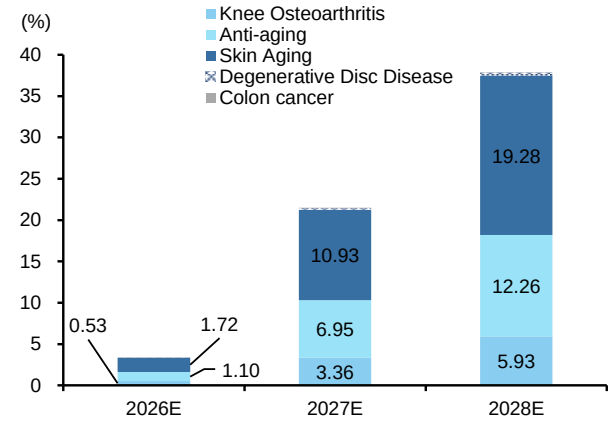


Sources: MEDEZE; Globlex Research

In 2026-28, we anticipate the revenue from ATMP to rise from Knee Osteoarthritis (THB5m in 2026 to THB111m in 2028), Anti-aging (THB9m in 2026 to THB230m in 2028), Skin Aging (THB15m in 2026 to THB362m in 2028), Degenerative Disc Disease (THB0.3m in 2026 to THB7m in 2028), and Colon cancer (THB0.03m in 2026 to THB0.76m in 2028). The revenue portion from ATMP to increase from 3.2% in 2026 to 20.6% in 2027 and 36.7% in 2028, becoming a significant growth portion for MEDEZE.

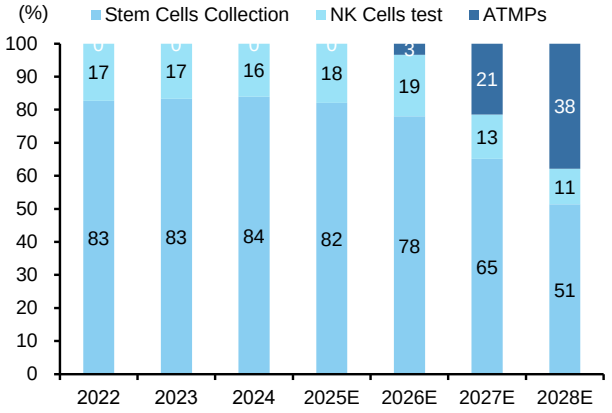
In conjunction with the ATMP revenue growth, we project revenue from Adipose to grow at faster rates at +135%/+22%/+14% in 2026-28 as most new customers for ATMP will require to complete the Adipose stem cell collections before proceeding to ATMP treatments.

Exhibit 41: ATMP revenue growth breakdown by disease



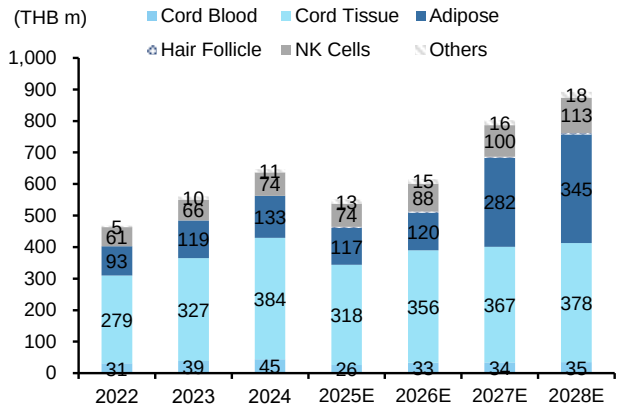
Sources: MEDEZE; Globlex Research

Exhibit 42: Revenue breakdown by segments (%)



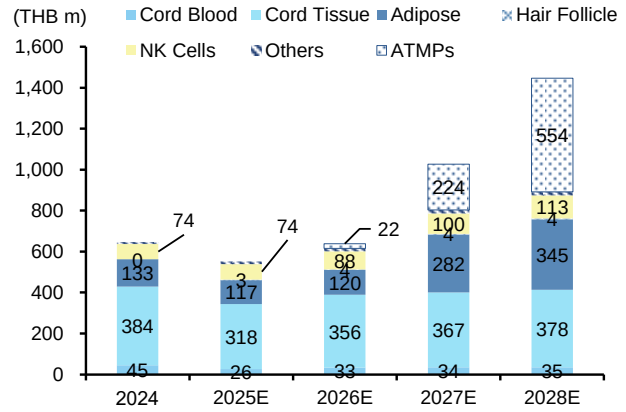
Sources: MEDEZE; Globlex Research

Exhibit 43: MEDEZE's existing business gross profit breakdown by segment



Sources: MEDEZE; Globlex Research

Exhibit 44: MEDEZE's gross profit breakdown by existing business vs ATMP



Sources: MEDEZE; Globlex Research

Are ATMP growths the low-hanging fruits?

It is now coming to the final and perhaps the most critical question for investors

"Are ATMP growth the low-hanging fruits for MEDEZE?"

We believe so. Let's look at how this growth will be based on following reasons.

Reason#1: Thailand has strong growth potentials for ATMP. Countless diseases have been either too costly, too risky, or too difficult to treat, resulting in significant financial burdens for not only patients and their families but also for the government to shoulder. All five diseases targeted by MEDEZE in applying the stem cell therapy as ATMP to treat patients - Knee Osteoarthritis, Anti-Aging, Skin Aging, Degenerative Disc Disease, and Colon Cancer (later called KASDC) – all are under the higher-cost, higher-risk diseases for the traditional treatment compared to ATMP.

To identify the potential market values of these five diseases, we deployed three factors that will narrow down the highly potential patients based on

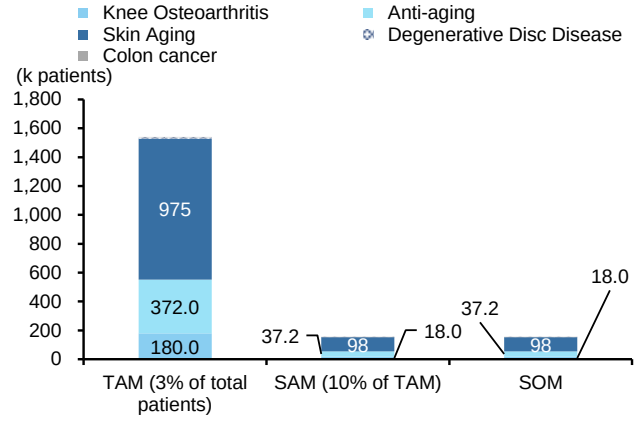
1) Total Addressable Market (TAM) as 3% of total patients of each disease, defining as patients who either are willing to pay or have financial capability to pay by themselves or their insurance coverages
2) Serviceable Addressable Market (SAM) as 10% of TAM, defining as patients who are accessible by MEDEZE to offer its stem cell ATMP therapy as a better alternative to traditional treatments
3) Serviceable Obtainable Market (SOM) as 100% of SAM, defining as the patients who have high probability to accept MEDEZE's stem cell ATMP therapy

Exhibit 45: Number of patients for MEDEZE's 5 targeted diseases for stem cell ATMP

(no of patient)	No. of Patient	Total Addressable Market (TAM, 3% of total patients)	Serviceable Addressable Market (SAM, 10% of TAM)	Serviceable Obtainable Market (SOM, 100% of SAM as MEDEZE is the only player in Thailand)
Knee Osteoarthritis	6,000,000	180,000	18,000	18,000
Anti-Aging	12,400,000	372,000	37,200	37,200
Skin Aging	32,500,000	975,000	97,500	97,500
Degenerative Disc Disease	380,000	11,400	1,140	1,140
Colon cancer	17,000	510	51	51
Total KASDC	**51,297,000**	**1,538,910**	**153,891**	**153,891**

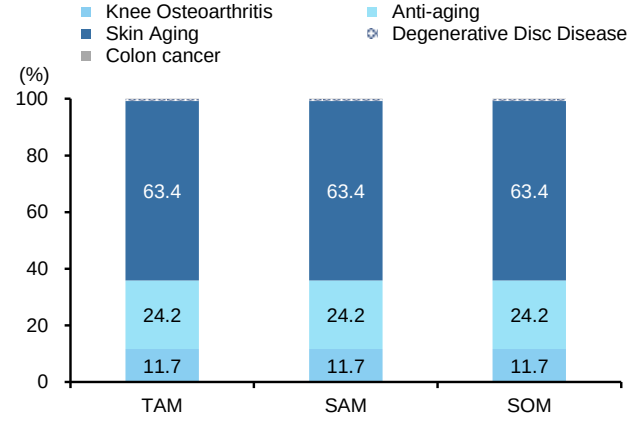
Sources: MEDEZE

Exhibit 46: Number of patients for MEDEZE's disease targets



Sources: MEDEZE

Exhibit 47: Number of patients for MEDEZE's disease targets (%)



Sources: MEDEZE

Thailand has a high number of patients who suffer from MEDEZE's five target diseases KASDC. We estimate that the total KASDC's SOM for MEDEZE will be 153,891 patients, with majority coming from Skin-Aging (97,500), followed by Anti-Aging (37,200), Knee Osteoarthritis (18,000), Degenerative Disc Disease (1,140), and Colon Cancer (51).

Exhibit 48: Five diseases targeted by MEDEZE

(no of patient)	Market value (THB b)	% potential market size	No. of Patient	TAM	SAM	SOM
Knee Osteoarthritis	4.5	10.0	6,000,000	180,000	18,000	18,000
Anti-Aging	9.3	10.0	12,400,000	372,000	37,200	37,200
Skin Aging	14.6	10.0	32,500,000	975,000	97,500	97,500
Degenerative Disc Disease	0.3	10.0	380,000	11,400	1,140	1,140
Colon cancer	0.2	10.0	17,000	510	51	51
Total KASDC	**28.9**	**10.0**	**51,297,000**	**1,538,910**	**153,891**	**153,891**

Sources: MEDEZE

Compared to other countries, Thailand has higher ratios of patients for KASDC, particularly for

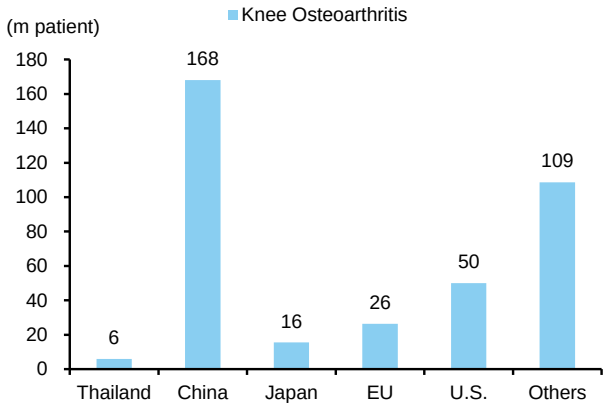
- Knee Osteoarthritis at 8.38% of total population vs world's average 4.54%. It is interesting to note that the ratios are higher for China (11.99%), Japan (12.6%), and U.S. (14.7%), meaning that once MEDEZE succeeds in securing its stem cell therapy ATMP as a medicine by 4Q26, there exists growth opportunities for foreign patients
- Degenerative Disc Disease at 18.44%, far higher than world's average 4.88%

Exhibit 49: Ratios of patient-to-population for Knee Osteoarthritis, Degenerative Disc Disease, and Colon Cancer

Market Analysis		Thailand	SEA	China	Japan	EU	U.S.	Others	World
No. of Patient									
Knee Osteoarthritis	Prevalent of disease	6.00		168.00	15.62	26.45	50.00	108.67	374.74
Degenerative Disc Disease	Prevalent of disease	13.20		200.00			64.40	125.40	403.00
Colon Cancer	New patient/year	0.02	0.11	0.52	0.15	0.54	0.16	0.44	1.93
% population									
Knee Osteoarthritis	Prevalent of disease	8.38	0.00	11.99	12.60	5.87	14.70	2.08	4.54
Degenerative Disc Disease	Prevalent of disease	18.44	0.00	14.28	0.00	0.00	18.94	2.40	4.88
Colon Cancer	New patient/year	0.02	0.02	0.04	0.12	0.12	0.05	0.01	0.02
Population (m persons)		**71.6**	**701.4**	**1,401.0**	**124.0**	**450.4**	**340.1**	**5,233.8**	**8,250.7**

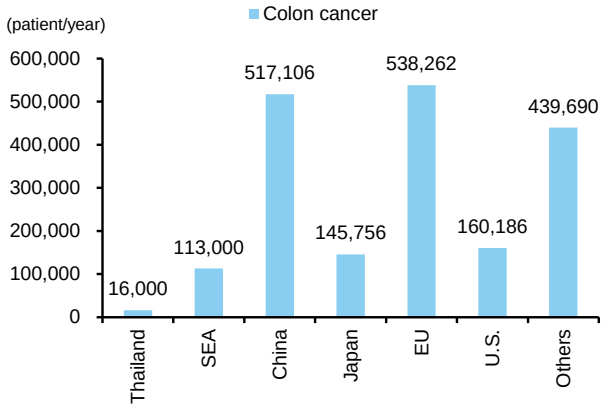
Sources: MEDEZE; WHO

Exhibit 50: Number of knee osteoarthritis



Sources: MEDEZE; Globlex Research

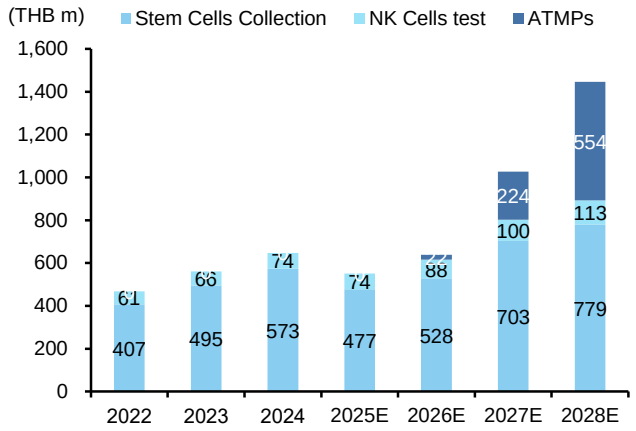
Exhibit 51: Number of colon cancer patients



Sources: MEDEZE; Globlex Research

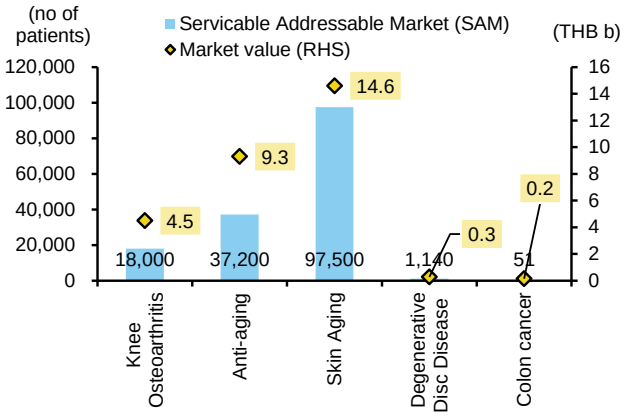
Market value potentials: The aggregate market value of KASDC for MEDEZE is worth THB28.9b, led by Skin-Aging (THB14.6b), Anti-Aging (THB9.3b), Knee Osteoarthritis (THB4.5b), Degenerative Disc Disease (THB0.3b), and Colon Cancer (THB0.2b).

Exhibit 52: Gross profit breakdown by key segments



Sources: MEDEZE; Globlex Research

Exhibit 53: Number of patients (knee osteoarthritis, degenerative disc disease)

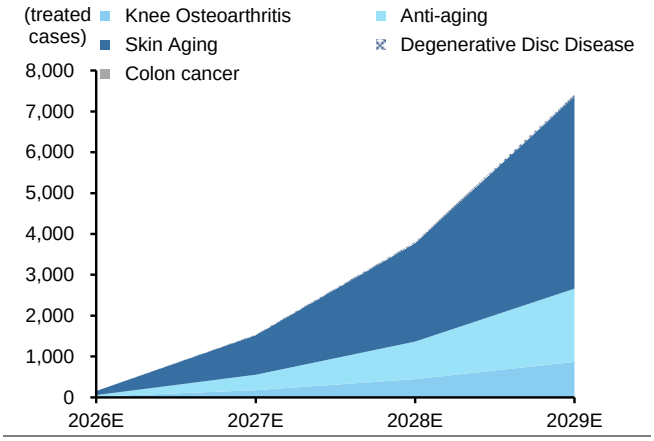


Sources: MEDEZE; Globlex Research

Thailand has seen growing number of patients with diseases that not only have costed the government and patients many THB billions but also caused countless deaths and injuries. In MEDEZE's stem cell therapy context, MEDEZE has identified five key diseases to be targets once MEDEZE's stem cell therapy ATMP is successfully registered as a medicine by 4Q26.

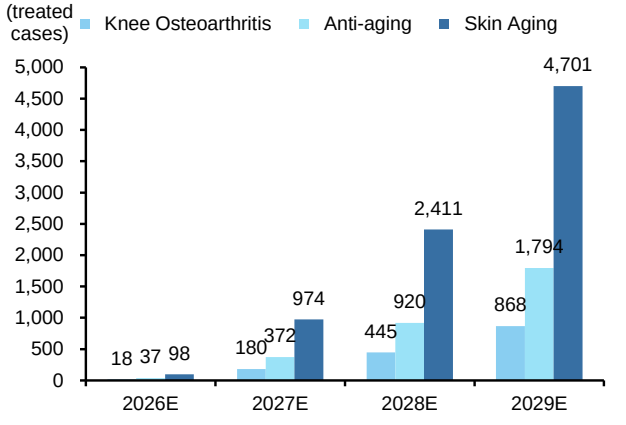
We believe these five targeted diseases will enable MEDEZE to offer an alternative, once-in-a-lifetime treatments for patients to choose and compare with other traditional treatments, which are more costly and mostly less effective than MEDEZE's stem cell therapy ATMP.

Exhibit 54: Accumulated number of treatments by MEDEZE's ATMP



Sources: MEDEZE; Globlex Research

Exhibit 55: Number of treatments by MEDEZE's ATMP



Sources: MEDEZE; Globlex Research

Reason#2: The more cost effective than traditional treatment. The cost of treatment for many diseases have risen sharply in the past decades given most equipment are imported at excessively high prices.

Exhibit 56: Cost per treatment of five diseases targeted by MEDEZE

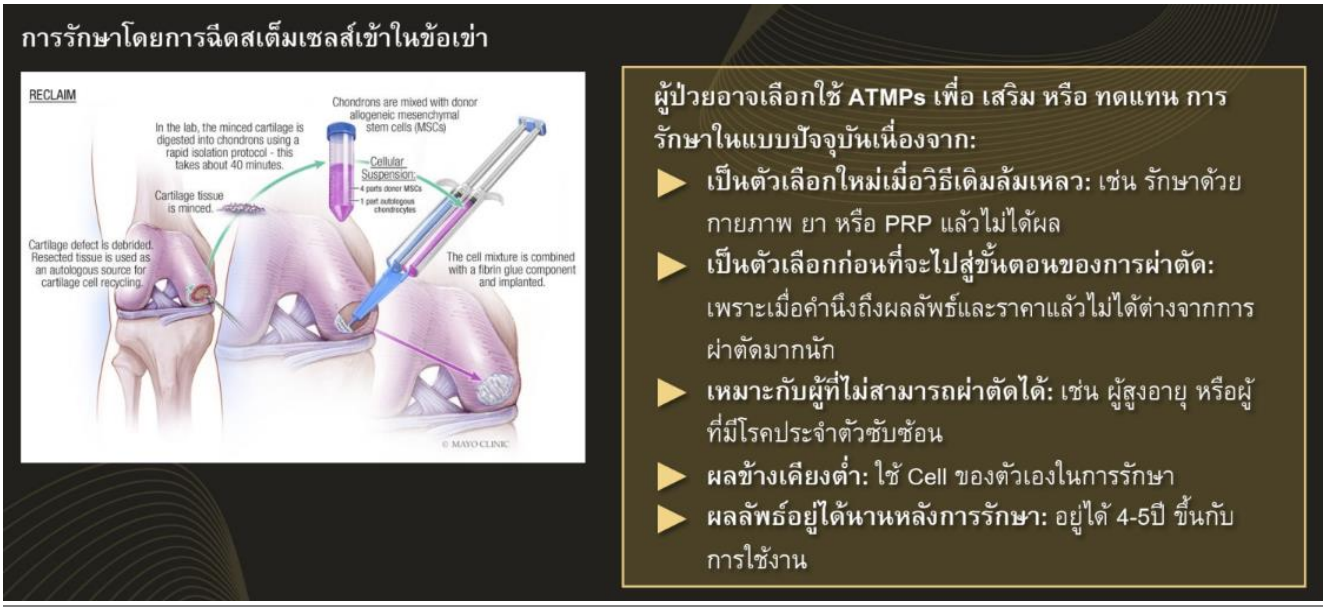
Disease	No. of Patient (patient)	Serviceable Addressable Market (SAM) (patient)	Cost per treatment (THB/treatment)	Market value (THB b)
Knee Osteoarthritis	6,000,000	18,000	**250,000**	4.5
Anti-aging	12,400,000	37,200	**250,000**	9.3
Skin Aging	32,500,000	97,500	**150,000**	14.6
Degenerative Disc Disease	380,000	1,140	**250,000**	0.3
Colon cancer	17,000	51	**600,000**	0.2
Total	**51,297,000**	**153,891**	**300,000**	**28.9**

Sources: MEDEZE; WHO

Several reasons support ATMP as a better alternative to traditional treatments

- ATMP has a comparable cost but more effective than traditional treatment: The example in case is THB0.25m cost per traditional treatment for knee osteoarthritis due to the required imported components
- ATMP could be other solutions when other treatments fail (medicines, PRP, physical therapy)
- ATMP is more suitable for senior or patients who are unable to take traditional treatments
- ATMP has lower side effects (autologous)
- ATMP has a longer lasting effect, usually 4-5 years

Exhibit 57: ATMP vs traditional treatments for Knee Osteoarthritis

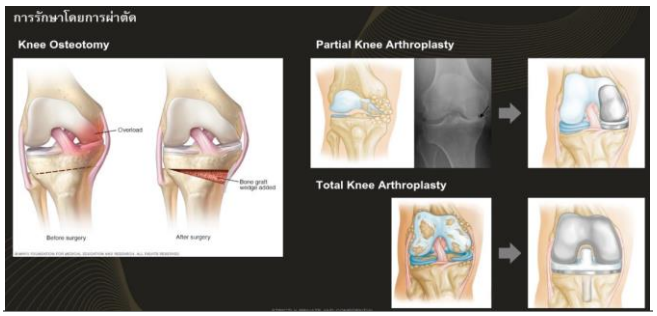


Sources: MEDEZE

Exhibit 58: Current treatments for Knee Osteoarthritis

Sources: MEDEZE

Exhibit 59: Knee Arthroplasty



Sources: MEDEZE

We highlight that while the treatment costs of ATMPs are mostly high, the price per treatment will be more affordable and hence successfully commercial to the wide number of patients. Hence unless the ATMP treatment cost would have to be lower than USD0.5m per dose (treatment), given the costs of other treatments are chronic, less reliable, and not universal to any patients, such ATMP will normally be unsuccessful at a commercial scale.

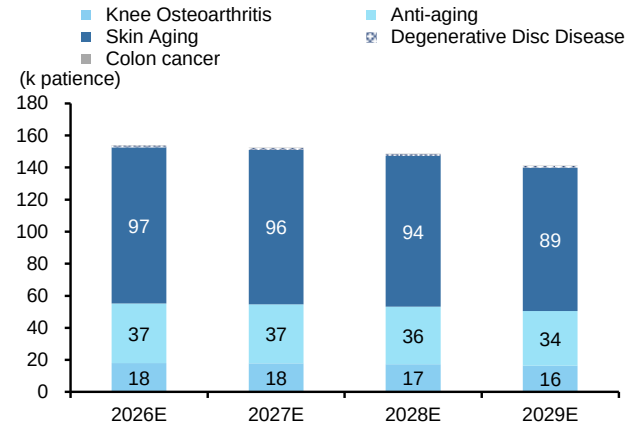
Exhibit 60: Examples of ATMPs approved and marketed worldwide

ATMP	Product brand	Diesease treated	Applications	Year licensed	Price per dose
Gene therapy	Kymriah, Yescarta	B-cell lymphomas	Ex vivo	2017-18	$0.5m
Gene therapy	Strimvelis	ADA-SCID immunodeficiencies	Ex vivo	2017	£0.6m
Gene therapy	Zolgenma	SMA neurological disorder	In vivo	2019	£1.7m
Gene therapy	Hemgenix	Haemophilia B	In vivo	2021	$3.5m
Gene therapy	Glybera	Lipoprotein lipase deficiency	In vivo	2012	$1.0m
Gene therapy	Roctavian	Haemophilia	In vivo	2022 EU/2023 U.S.	$2.9m
Stem cell therapy	Alofisel	Perianal fistulas Crohn's disease	Ex vivo	2018	$0.03m
Stem cell therapy	Cartistem	Knee cartilage repair	In vivo	2012	$0.03m
Stem cell therapy	Amtagil (lifileucel)	Tumor-infiltrating lymphocyte (TIL) (skin cancer)	Ex vivo	2024	$0.5m

Sources: EMA: FDA; WHO

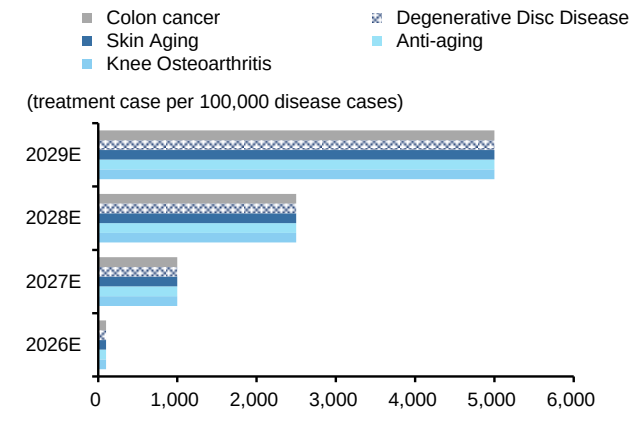
With a proven track record of stem cell operation over a decade, a highly automated system, and a highly skilled healthcare and R&D staff, we think MEDEZE stands to be ready to provide stem cell therapy ATMP at a competitive pricing compared to other treatments. While each disease offers different growth opportunity for MEDEZE, we think the knee osteoarthritis is the most promising disease due to its undisputed advantages over competing traditional treatments.

Exhibit 61: Untreated cases of MEDEZE's targeted diseases in Thailand



Sources: MEDEZE

Exhibit 62: Assumptions of MEDEZE's ATMP treatment cases for each targeted disease



Sources: MEDEZE

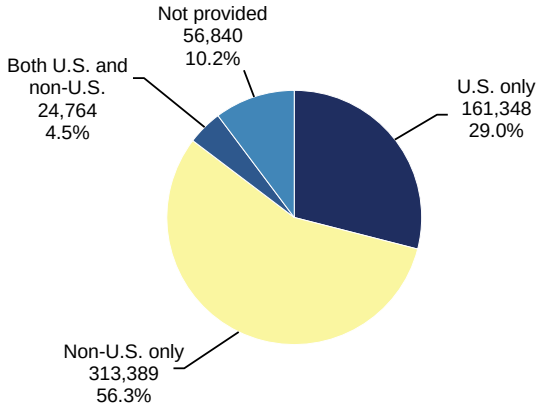
High growth potentials for ATMP

We believe MEDEZE is one of Thailand's leading healthcare companies who has highly visible potentials to become a leading ATMP provider, not only for Thai patients but also for foreign patients who seek "highly effective, critically essential, and competitively affordable" solutions for treatments of not only rare but more common diseases.

Global number of clinical trials have grown markedly. The rising number of registered studies and recruiting studies of clinical trials worldwide, based on data of ClinicalTrials.gov with 556,341 studies in locations that including the U.S. and 224 countries and territories, clearly indicate that the race for new medicines worldwide is incessantly high, led by the U.S. at the forefront of global medicine industry.

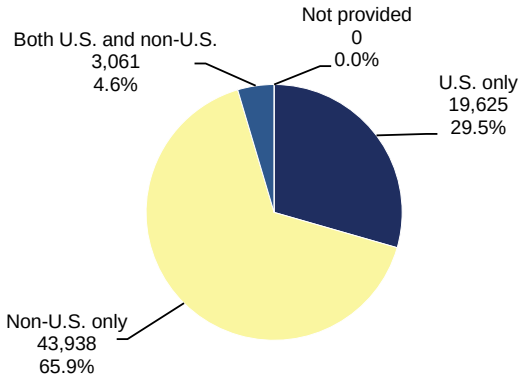
Thailand is now catching fast in ATMP. In this context, Thailand is fast catching up in ATMP segment even though the country is far behind in other healthcare treatment fields, thanks to MEDEZE as the only player and the pioneer of the stem cell therapy ATMP. The fast-moving steps of ATMP development occurring worldwide and Thailand have confirmed the strategic value and economic alternative to incumbent traditional treatments.

Exhibit 63: Number of Registered Studies (556,341) as of 10 October 2025



Sources: National Library of Medicine

Exhibit 64: Number of Recruiting Studies (66,624) as of 10 October 2025



Sources: National Library of Medicine

Global ATMP market size to grow 4.7x in 10 years. Undoubtedly, global ATMP is forecast to grow at a 16.83% CAGR in 2025-32, led by the U.S. at 16.92% CAGR. While North America is the largest ATMP market region, Asia Pacific is the fastest growth ATMP market region and Thailand could position itself as the leading hub for ATMP, aligning with Thai government's goal to turn Thailand into "Medical Hub & ATMP".

Exhibit 65: Global ATMP market size and growth projections

(USD b)	2023	2024	2025E	2034E	CAGR (2025E-34E)
Global	9.28	35.98	42.04	170.47	16.83
North America		17.63	17.63	na	16.92
Dominant region		North America	North America	North America	
Fastest growing region		Asia Pacific	Asia Pacific	Asia Pacific	

Sources: EMA; ResearchGate

High commercial success warrants a BUY

We summarize our investment thesis for MEDEZE with three scenarios

Base case: MEDEZE will be able to secure 0.3% of total patients for each five diseases targeted by MEDEZE (KASDC), coming from TAM at 3% of total patients and SAM/SOM at 10% of TAM.

Best case: MEDEZE will be able to secure 0.6% of total patients for each five diseases targeted by MEDEZE (KASDC), coming from TAM at 4% of total patients and SAM/SOM at 15% of TAM.

Worst case: MEDEZE will be able to secure 0.1% of total patients for each five diseases targeted by MEDEZE (KASDC), coming from TAM at 2% of total patients and SAM/SOM at 5% of TAM.

Exhibit 66: Assumptions of MEDEZE's three scenarios for number of patients secured (demand)

	Worst case	Base case	Best case	Unit
Total Addressable Market (TAM, % of total patients)	**2.0**	**3.0**	**4.0**	**%**
Serviceable Addressable Market (SAM, % of TAM)	5.0	10.0	15.0	%
Total patients	51,297,000	**51,297,000**	51,297,000	patients
Total Addressable Market (TAM, no of patients)	1,025,940	**1,538,910**	2,051,880	patients
Serviceable Addressable Market (SAM, no of patients)	51,297	153,891	307,782	patients
Total market value	**9.6**	**28.7**	**57.5**	**THB b**

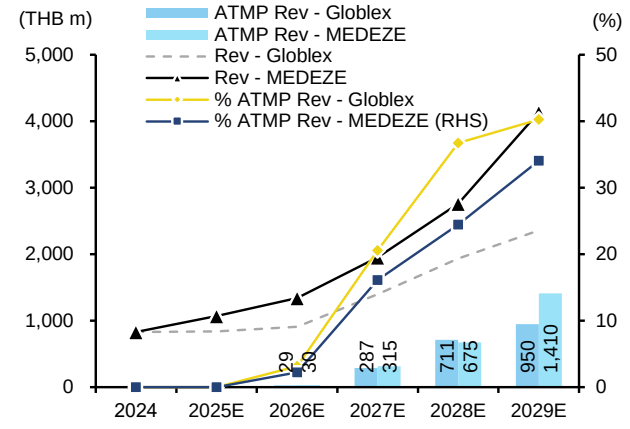
Sources: MEDEZE; Globlex Research

Using the base case scenario, we further made assumptions of % Serviceable Obtainable Market (SOM) or the number of patients of each disease (KASDC) that MEDEZE eventually succeed in securing for its stem cell therapy ATMP.

Our assumptions for % SOM, which is used to predict ATMP revenue, compared to MEDEZE's assumptions (implied by our calculations), are

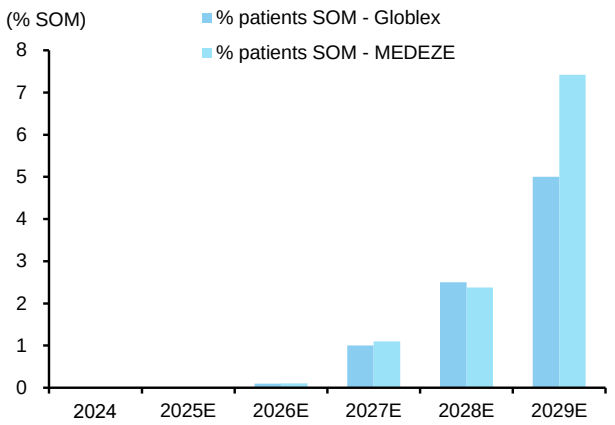
- 2026E: Globlex (0.1%) = MEDEZE (0.1%)
- 2027E: Globlex (1.0%) = MEDEZE (1.1%)
- 2028E: Globlex (2.5%) = MEDEZE (2.4%)
- 2029E: Globlex (5.0%) = MEDEZE (7.4%)

Exhibit 67: Assumptions of ATMP revenue growths (Globlex vs MEDEZE)



Sources: MEDEZE; Globlex Research

Exhibit 68: Assumptions of % SOM for ATMP revenue growths (Globlex vs MEDEZE)



Sources: MEDEZE; Globlex Research

It is evident that our assumptions for % SOM for ATMP revenue generation are on par (0.1%) with MEDEZE in 2026, slightly lower in 2027 (1.0% vs MEDEZE's 1.1%), more bullish in 2028 (2.5% vs MEDEZE's 2.4%), and significantly lower in 2029 (5.0% vs MEDEZE's 7.4%). The discrepancy should mainly come from the future long-term expectation of the success in ATMP as a medicine, three years after MEDEZE's ATMP is registered as a medicine.

Exhibit 69: Comparison of key assumption of % SOM for ATMP revenues (Globlex vs MEDEZE)

	2024	2025E	2026E	2027E	2028E	2029E
Total revenue (THB m)						
Rev - Globlex	829	841	909	1,397	1,936	2,360
Rev - MEDEZE	829	1,070	1,342	1,952	2,759	4,137
ATMP revenue (THB m)						
ATMP Rev - Globlex	0	0	29	287	711	950
ATMP Rev - MEDEZE	0	0	30	315	675	1,410
% ATMP revenue to total revenue						
% ATMP Rev - Globlex	0	0	3.2	20.6	36.7	40.3
% ATMP Rev - MEDEZE	0	0	2.2	16.1	24.5	34.1
% patients secured assumptions						
% patients SOM - Globlex	0	0	0.1	1.0	2.5	5.0
% patients SOM - MEDEZE	0	0	0.1	1.1	2.4	7.4

Sources: MEDEZE; Globlex Research

Initiated with a BUY; TP at THB8.5

We initiated MEDEZE with a BUY and a TP of THB8.5, based on P/E of 25x 2026E P/E, justified by

High net profit growth of 28% CAGR IN 2024-28E, driven by the growths in ATMP revenues and net profits.

Higher net profit margins from 26.9% in 2025 to 47.9% in 2028, driven by both higher revenues from existing stem cell and ATMPs

Higher ROEs from 7.1% in 2025 to 17.8% in 2028, boosted by the high-margin ATMP earnings growths

A premium to the average 2026E P/E of 20-25x for global pharmaceutical peers, thanks to MEDEZE's first-mover competitive advantages in stem cell ATMP

Exhibit 70: Dupont analysis

	2024 (THB m)	2025E (THB m)	2026E (THB m)	2027E (THB m)	2028E (THB m)
Sales	824	811	879	1,367	1,906
Total assets	3,429	3,765	4,245	5,180	6,477
Asset Turnover (x)	0.24	0.22	0.21	0.26	0.29
Operating profit	364	283	447	714	978
OPM (%)	44.2	34.8	50.9	52.3	51.3
Net profit	339	218	365	647	912
NPM (%)	41.1	26.9	41.5	47.4	47.9
Shareholders' equity	1,749	3,065	3,443	4,101	5,115
Leverage	2.0	1.2	1.2	1.3	1.3
ROE (%)	**19.4**	**7.1**	**10.6**	**15.8**	**17.8**

Sources: MEDEZE; Globlex research

Exhibit 71: Valuation P/E

	EPS (THB/share)		
P/E (x)	2025E	2026E	2027E
	0.20	0.34	0.61
20	4.1	6.8	12.1
21	4.3	7.2	12.7
22	4.5	7.5	13.3
23	4.7	7.9	13.9
24	4.9	8.2	14.5
25	5.1	**8.5**	15.2
26	5.3	8.9	15.8
27	5.5	9.2	16.4

Sources: Globlex research

Background

Founded in 2010 with a current registered capital of THB530m, MEDEZE is Thailand's only provider of the stem cell therapy for treatments in a number of diseases and other applications like anti-aging, with 15+ years of experience providing services in the analysis, isolation, cultivation, and storage of stem cells, as well as NK cells potency testing.

While revenue and net profit are likely to decline in 2025 due mainly to the company's investment in the preparation of turning its stem cell therapy product from an alternative to a medicine for not only rare but also common diseases, we project revenue growth to accelerate starting in 2026 onwards, driven by the treatment-turn-medicine ATMP for MEDEZE's stem cell therapy.

Five key ATMP regulations and guidelines have already been issued and legalized, including guidelines for cell therapy ATMP and gene therapy ATMP to be registered as medicine, guidelines for conditional ATMP approval, standards for R&D to be used as a required component for ATMP to be registered as a medicine, and classification for ATMPs.

MEDEZE's stem cell therapy ATMP to be registered as a medicine in 2H26E. we project MEDEZE's stem cell therapy ATMP to be registered as a medicine by 4Q26, passing the 6 to 9-month clinical phase period by Sep or Oct-2026 before being registered as a medicine and then to be marketed to hospitals nationwide.

Technology advancement to accelerate ATMP's transition from rare to common diseases treatment

With the advent of AI and ML technologies, personalized medicine or precision medicine can help in better understanding the overall health problems, the disease risks that come with it and ultimately predict better treatment responses. In fact, traditional medicine focuses on what treatments work for most patients, whilst personalized medicine focuses on what treatments work for this individual patient.

In that regard, genetics is driving treatments to predict future disease risk by providing the population with many tests that can drive preventative measures such as mammography, surgery and the like.

The use of digital platforms embedded with AI algorithms can also help in increasing knowledge and awareness in patients about their hereditary risks so that they can increase treatment adherence with genetic diagnosis. Combining clinical procedures (molecular biology, sequencing technologies and medical technologies) with information technology (big data, processing capacity and connected technologies) can really push the field forward, repurpose the drug discovery process and through novel therapeutic approaches, enable the patients to get the right drug, at the right dose, at the right time and in the long term (monitored through the use of portable health devices

AI and stem cell therapy ATMP. In recent years, the incorporation of AI technology into stem cell therapy, regenerative medicine, and drug development has advanced considerably. AI encompasses the creation of computer systems capable of executing tasks that typically necessitate human intelligence. It has emerged as an essential component in conducting computational simulations and in silico studies within medical applications, providing numerous benefits, including reduced costs and expedited results when compared to traditional medical research methods, such as clinical and laboratory investigations.

Presently, various initiatives are underway to integrate AI across a broad spectrum of sectors, including but not limited to medicine, pharmaceuticals, and healthcare. Within regenerative medicine, AI technologies enable the real-time observation of manufacturing processes, which is essential for ensuring product quality and uniformity. By examining extensive datasets produced during manufacturing, AI can forecast quality characteristics and facilitate automated modifications using feedback control systems. This feature allows for rapid detection of any deviations from optimal conditions. As a result, it reduces the extent of these deviations and enhances confidence in ATMPs.

Exhibit 72: Stem cell process

Sources: MEDEZE

Exhibit 73: Automated Sorting Technology (AutoXpress)

Sources: MEDEZE

How has MEDEZE already succeeded in applying AI for stem cell therapy?

Automated Sorting and Separation Technology. The integration of AI allows for the automation of various manufacturing tasks, reducing human-induced variability and errors. Automated systems can manage complex production environments more efficiently than manual processes, leading to higher scalability and reduced operational costs. This is particularly beneficial in the context of personalized medicine, where production must adapt to unique patient-specific requirements.

In 2011, MEDEZE implemented and deployed the AutoXpress automated machine, which can separate hematopoietic stem cells from umbilical cord blood. This technology reduces the risk of contamination and human error during the stem cell separation process.

Exhibit 74: Stem cell separation process

Sources: MEDEZE

Exhibit 75: Stem cell storage services

Sources: MEDEZE

Stem cell storage and stem cell banking. Regenerative medicine and tissue engineering primarily rely on using stem cells for patient treatment; however, they may also incorporate mature cells that are not typically classified as stem cells. Stem cells can be sourced from various body parts, including bone marrow, cord blood, and adipose tissue. While stem cells are frequently utilized in therapies immediately after isolation, there are instances where stem and progenitor cells are collected, processed, and cryopreserved for future use. Biobanking is a practical alternative to immediate therapeutic application, facilitating patient recovery, allowing time to determine optimal treatment strategies, and enabling multiple interventions without imposing additional inconvenience or risk on the patient.

Although routine bone marrow banking is uncommon, the practice of cord blood banking for transplantation and regenerative medicine has paved the way for establishing cord tissue banking for future applications in these fields. This banking process involves freezing samples, which can be preserved indefinitely, in contrast to the cold storage methods used for red blood cells. For adults without access to cord blood collected at birth, adipose tissue banking has recently emerged as a promising option, given its abundance of MSCs. Notably, frozen adipose tissue has been successfully thawed after being stored for up to three years and has been used to treat over 200 patients.

In 2013, MEDEZE launched a Stem Cell Storage Services, offering stem cell storage services using tissue extracted from the fat of individuals for stem cell banking that has been one of the core strengths of MEDEZE's business model today, evidenced with the awards of "Thailand Stem Cell Banking Company of the Year" from Frost & Sullivan in 2017-21 and Southeast Asia Stem Cell Banking Technology Innovation Leadership Award from Frost & Sullivan in 2020-21, 23-24.

Exhibit 76: MEDEZE's stem cell banking

Sources: MEDEZE

Exhibit 77: MEDEZE's stem cell process

Sources: MEDEZE

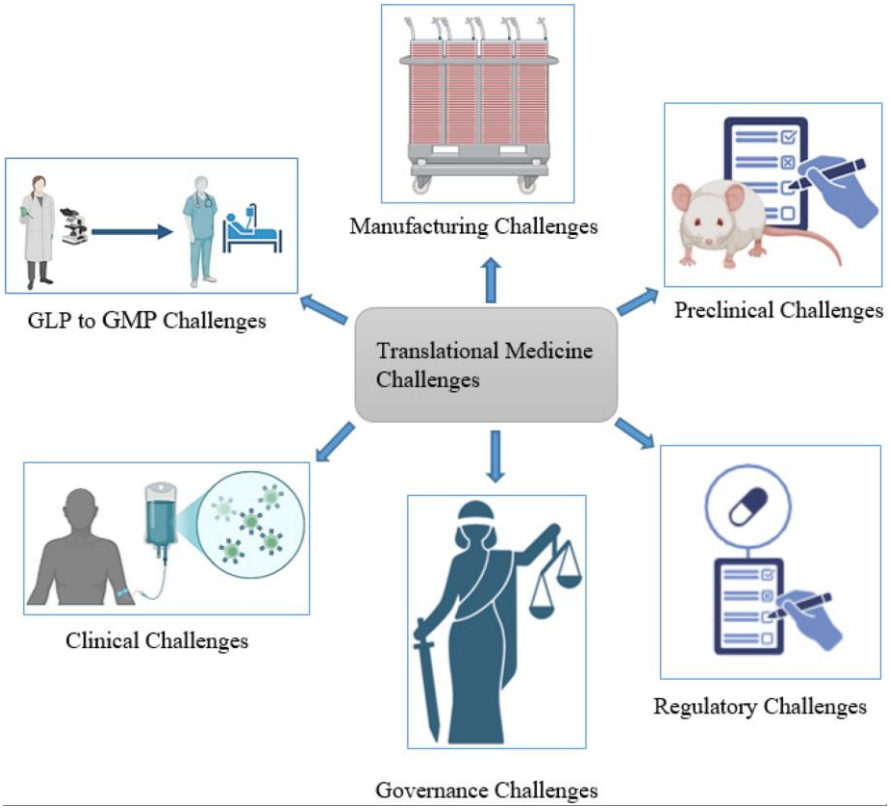
Enhancing stem cell process. AI can enhance and streamline processes such as the analysis of extensive datasets comprising molecular and genetic information, enabling the identification of patterns and correlations that may elude human researchers. Creating regenerative therapies requires examining intricate and voluminous data, a domain where AI technology can be effectively utilized. Notable applications of AI in regenerative medicine encompass disease modelling, drug discovery, tissue engineering, cell therapy, and personalized medicine.

In 2017, MEDEZE launched Immune Cell (NK Cells) Testing Services, offering services to test the potential of immune cells (NK Cells) that now generates 16-17% of total revenue in 2022-24.

Government's strong supports and MEDEZE's high readiness. In personalized medicine, accurately forecasting a patient's response to a specific treatment poses a considerable challenge due to the complexity of biological systems. AI has the potential to address this issue by analyzing patient data to uncover patterns and correlations that can inform treatment outcomes.

One method through which AI can contribute to personalized medicine is by evaluating a patient's genomic information. AI algorithms can detect genetic variations associated with specific diseases or treatment responses, thereby facilitating the creation of tailored treatment strategies based on the individual's genetic profile. MEDEZE has been proactively and consistently implemented AI in enhancing its stem cell process with strong government's support to put MEDEZE's stem cell therapy into Thailand's first group of ATMP product sandbox.

Exhibit 78: Government's dilemma between promoting public good and encouraging R&D advancement for transitional medicines



Sources: ScienceDirect

MEDEZE has focused on patient' heal on practical approaches. Putting the patient back at the center of the whole clinical trial process is another key aspect. Stratifying them in groups based on a greater likelihood of responding to a particular therapy or avoidance of side effects based on their unique genetic and environmental profile can lead to more efficient, safer and cheaper clinical trials, reducing the burden on healthcare systems and increasing the chances of survival or remission for patients worldwide.

For the success of such innovative models, many stakeholders need to work together and, towards the same goal, make these innovative medicines more affordable, effective and safer for everyone. Ethics committees are needed so that the selection eligibility criteria are fair and to avoid exposure of patients to high-risk treatments or misconducts during the trials.

ATMP sandbox and value chain heavily promoted by Thai regulators. Regulatory challenges can also be a bottleneck in the release of ATMPs, hence the need for stable and qualitative products, experienced personnel (e.g. many qualified persons are used to small molecules and large batches with less experience with ATMPs, same for manufacturers and clinicians) and robust quality management systems and processes. The right GMP infrastructures and supply and logistics services are also fundamental and require a collaborative effort and coordination across industries to really move towards more disruptive and innovative solutions.

Within the context of stakeholders' value chain and regulatory handling, MEDEZE has been highly successful in cooperating with all stakeholders, including the R&D and the soon-to-launch clinical trials at Thailand's two designated sandbox hospitals in Bangkok and Phuket. As a result, MEDEZE is able to accelerate its stem cell therapy to be registered as the ATMP medicine by the end of 2026, based on our estimate.

Exhibit 79: ATMP sandbox#1: Bangkok medical Centre, Department of Disease Control in Bangrak, Bangkok

Sources: MEDEZE

Exhibit 80: ATMP sandbox#2: Vachira Hospital in Phuket

Sources: MEDEZE

Right partnership with CDMO further strengthen MEDEZE. MEDEZE also has already secured tight supply chain in stem cell products with the right Contract Development and Manufacturing Organization, a company that provides a full range of services to pharmaceutical and biotech companies, from initial drug development and formulation to large-scale commercial manufacturing. CDMOs help clients (MEDEZE) by providing expertise, resources, and facilities, which can reduce costs, accelerate time to market, and ensure compliance with regulations. They are different from traditional Contract Manufacturing Organizations (CMOs), which focus only on manufacturing, and Contract Research Organizations (CROs), which focus on research and clinical trial

Industries like contract research organizations, CDMOs, contract manufacturing organizations or even start-up companies with innovative ideas but not the facility infrastructure must collabo-rate to bring down the costs of these therapies and avoid market failures, as we have seen in the case of Strimvelis.

The future is bright for ATMPs, many emerging strategies including new frameworks (e.g. California Institute for Regenerative Medicine (CIRM)'s framework) - 15 are being developed, tested or deployed to repurpose the current pharma model. However, continued innovation, investments and stakeholders' collaboration across industries will be crucial in overcoming the challenges ahead and ensuring that these groundbreaking therapies are available and accessible to the unmet needs of many patients worldwide

MEDEZE is at the right path, with right products, for right markets for growth

At a first glance, investors could feel that ATMP production and application may seem complicated, but their primary goal is simply enhancing people's health. But the obstacles encountered along the way have rendered the application of this treatment method challenging.

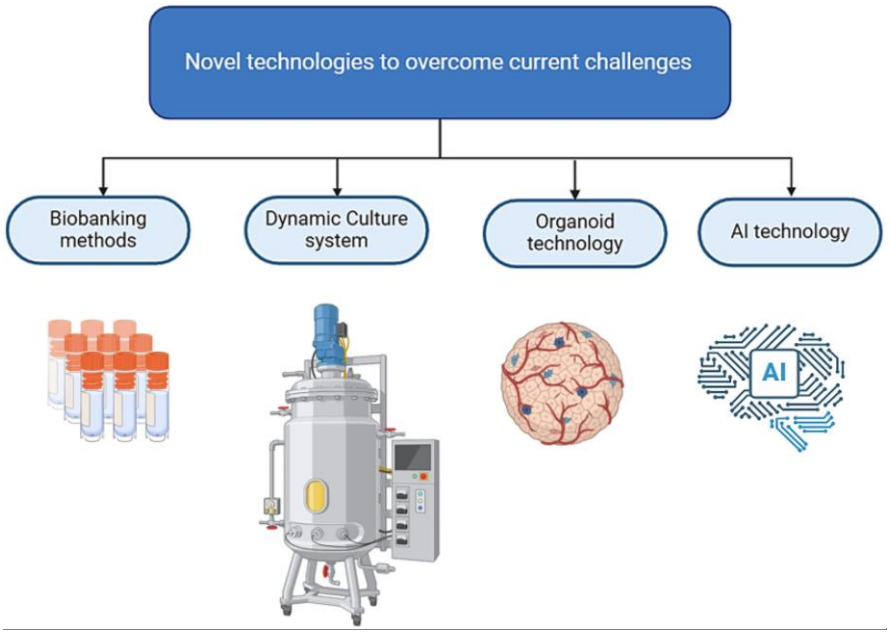
We think MEDEZE is now at the right juncture to overcome the challenges that necessitate cooperation among various collaborators, such as regulators (Thai FDA), industry participants (Sandbox hospitals and R&D institutes), and funding organizations (self-funding by MEDEZE at the moment), to establish a conducive environment for effectively advancing these groundbreaking therapies.

Also, the manufacturing of ATMPs is a highly regulated field that requires adherence to strict GMP guidelines and involves intricate processes aimed at ensuring product safety and efficacy. MEDEZE is more than ready to produce stem cell therapy ATMP products once the company receives the green light from Thai regulators.

Although ATMP products promise the treatment of complex diseases, their development faces numerous regulatory hurdles that require meticulous planning, substantial investment, and collaboration with regulatory bodies. Fortunately, ongoing advancements in regulatory policies and technological innovations continually shape this dynamic industry and Thailand is one of the countries that has been at the forefront of global ATMP, thanks to MEDEZE's first-mover strategy.

On the other hand. Many cutting-edge therapies often show promising results in laboratory experiments but tend to fail during more extensive animal studies or clinical trials. This problem partly stems from insufficient mechanistic insights and a limited availability of suitable in vitro, in vivo, and ex vivo models. But this will not be the case for MEDEZE considering that MEDEZE has already proven its capability of R&D, production, and applications for stem cell therapy.

Exhibit 81: Advanced technologies to overcome current challenges for ATMP



Sources: ScienceDirect

Last but not least, in developing ATMP products in clinical studies, challenges such as uncertainty in the optimal cell dose, frequency and intervals of administration, and the route of administration in the clinical environment and uncertainty in the quality of preclinical studies can be mentioned. Again, MEDEZE has already succeeded in previous clinical tests and commercial practices for stem cell for many years; thereby MEDEZE should succeed in passing all requirements to achieve its ultimate goal of registering the stem cell as ATMP by the end of 2026.

In summary, we think MEDEZE would achieve its stem cell ATMP and start to market as a medicine in 2026 onwards, armed by its state-of-the-art new technologies, such as AI and robotics, the formation of biobanks, the development of organoids, and the cultivation of dynamic systems, to help overcome all problems and challenges.

Developing vital manufacturing facilities that incorporate cutting-edge technologies, including AI for process oversight and regulation, can significantly improve production efficiency and product quality. Undoubtedly, these technologies present certain challenges; however, these obstacles can be addressed through advancements in the technologies themselves.

As this field progresses, clear regulatory guidelines for AI applications will be essential to maximize its advantages in the development of ATMPs. And we think MEDEZE will emerge as a leading player in Thailand's and perhaps regional stem cell therapy ATMP in Asia, catalyzing its revenue and net profit growth trajectories after the multi-year financial performances in the doldrums.

Balance sheet (THB m)					
Year ending Dec	**2023**	**2024**	**2025E**	**2026E**	**2027E**
Current assets					
Cash & ST investment	183	2,038	2,291	2,607	3,323
Account receivable	0	0	0	0	0
Inventories	12	18	17	14	22
Others	71	170	116	119	138
Non-current assets					
Net fixed assets	185	300	438	601	794
Others	568	904	904	904	904
Total Assets	**1,019**	**3,429**	**3,765**	**4,245**	**5,180**
Current liabilities					
Account payable	47	56	64	56	84
ST borrowing	5	7	9	10	12
Others	85	61	102	110	169
Long-term liabilities					
Long-term debts	5	17	20	24	29
Others	302	364	364	364	364
Total liabilities	**445**	**506**	**559**	**564**	**658**
Paid-up capital	400	534	534	534	534
Retained earnings	228	222	505	979	1,821
Others	(53)	2,167	2,167	2,167	2,167
Minority interest	(1)	1	0	0	0
Shareholders' equity	**574**	**2,923**	**3,206**	**3,681**	**4,522**

Profit & loss (THB m)					
Year ending Dec	**2023**	**2024**	**2025E**	**2026E**	**2027E**
Revenue	**707**	**874**	**841**	**909**	**1,397**
Cost of goods sold	(152)	(181)	(206)	(179)	(268)
Gross profit	**556**	**693**	**635**	**730**	**1,128**
Operating expenses	(251)	(329)	(353)	(283)	(414)
Operating profit	**326**	**390**	**306**	**479**	**756**
EBIT	**326**	**390**	**306**	**479**	**756**
Depreciation	(22)	(26)	(24)	(32)	(42)
EBITDA	**304**	**364**	**283**	**447**	**714**
Non-operating income	**6**	**23**	**0**	**0**	**0**
Other incomes	0	0	0	0	0
Other non-op income	6	23	0	0	0
Non-operating expense	**(15)**	**(18)**	**(20)**	**(18)**	**(18)**
Interest expense	(15)	(18)	(20)	(18)	(18)
Other non-op expense	0	0	0	0	0
Equity income/(loss)	0	0	0	0	0
Pre-tax Profit	**295**	**369**	**263**	**429**	**696**
Extraordinary items					
Current taxation	(55)	(30)	(45)	(64)	(49)
Minorities	0	0	0	0	0
Net Profit	**240**	**339**	**218**	**365**	**647**
Core net profit	**240**	**339**	**218**	**365**	**647**
EPS (THB)	**0.30**	**0.32**	**0.20**	**0.34**	**0.61**
Core EPS (THB)	**0.30**	**0.32**	**0.20**	**0.34**	**0.61**

Key ratios					
Year ending Dec	**2023**	**2024**	**2025E**	**2026E**	**2027E**
Growth (%YoY)					
Sales	9.7	23.6	(3.8)	8.1	53.6
Operating profit	2.3	19.6	(21.4)	56.5	57.7
EBITDA	2.1	19.7	(22.4)	58.3	59.6
Net profit	62.8	41.4	(35.7)	67.5	77.4
Core net profit	62.8	41.4	(35.7)	67.5	77.4
EPS	(8.4)	5.9	(35.7)	67.5	77.4
Core EPS	(8.4)	5.9	(35.7)	67.5	77.4
Profitability (%)					
Gross margin	78.6	79.3	75.5	80.3	80.8
Operation margin	46.1	44.6	36.4	52.7	54.1
EBITDA margin	43.0	41.7	33.6	49.2	51.1
Net margin	33.9	38.7	25.9	40.1	46.4
ROE	47.7	19.4	7.1	10.6	15.8
ROA	26.6	15.2	6.1	9.1	13.7
Stability					
Interest bearing debt/equity (x)	0.0	0.0	0.0	0.0	0.0
Net debt/equity (x)	n.a.	n.a.	n.a.	n.a.	n.a.
Interest coverage (x)	21.1	21.2	15.3	26.6	42.0
Interest & ST debt coverage (x)	15.9	15.2	10.7	16.9	24.9
Cash flow interest coverage (x)	0.4	0.6	0.3	0.5	1.0
Current ratio (x)	1.9	17.9	13.9	15.6	13.2
Quick ratio (x)	1.3	16.4	13.1	14.8	12.6
Net debt (THB m)	(173)	(2,014)	(2,262)	(2,572)	(3,281)
Activity					
Asset turnover (X)	0.3	0.2	0.2	0.2	0.5
Days receivables	0.0	0.0	0.0	0.0	0.0
Days inventory	29.3	29.3	29.3	29.3	29.3
Days payable	113.9	113.9	113.9	113.9	113.9
Cash cycle days	(84.6)	(84.6)	(84.6)	(84.6)	(84.6)

Cash flow (THB m)					
Year ending Dec	**2023**	**2024**	**2025E**	**2026E**	**2027E**
Operating cash flow	**190**	**317**	**151**	**260**	**645**
Net profit	240	339	218	365	647
Depre.& amortization	22	26	24	32	42
Change in working capital	45	17	7	(1)	60
Others	(116)	(64)	(97)	(136)	(105)
Investment cash flow	**(1,266)**	**(433)**	**(374)**	**(354)**	**(241)**
Net CAPEX	(39)	(39)	(39)	(39)	(39)
Change in LT investment	(368)	(93)	87	201	515
Change in other assets	(859)	(302)	(422)	(516)	(718)
Free cash flow	**(1,075)**	**(116)**	**(223)**	**(93)**	**403**
Financing cash flow	**812**	**771**	**475**	**410**	**313**
Change in share capital	175	2,357	0	0	0
Net change in debt	(1)	1	(1)	0	0
Dividend paid	(64)	(270)	65	109	194
Others	701	(1,317)	410	300	118
Net cash flow	**(264)**	**655**	**253**	**316**	**716**

Per share (THB)					
EPS	0.30	0.32	0.20	0.34	0.61
Core EPS	0.30	0.32	0.20	0.34	0.61
CFPS	0.58	0.46	0.23	0.37	0.65
BVPS	1.28	3.65	3.00	3.45	4.23
Sales/share	1.57	1.09	0.79	0.85	1.31
EBITDA/share	0.68	0.46	0.26	0.42	0.67
DPS	0.34	0.31	0.06	0.10	0.18
Valuation					
P/E (x)	0.0	28.1	30.6	18.3	10.3
P/BV (x)	0.00	3.25	2.08	1.81	1.48
Dividend yield (%)	n/a	3.51	0.98	1.64	2.91
Divdend payout ratio (%)	112.70	98.43	30.00	30.00	30.00

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Analyst Certification

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RECOMMENDATION STRUCTURE

Stock Recommendations

Stock ratings are based on absolute upside or downside, which we define as (target price* - current price) / current price.

BUY: Expected return of 10% or more over the next 12 months.
HOLD: Expected return between -10% and 10% over the next 12 months.
REDUCE: Expected return of -10% or worse over the next 12 months.

Unless otherwise specified, these recommendations are set with a 12-month horizon. Thus, it is possible that future price volatility may cause temporary mismatch between upside/downside for a stock based on market price and the formal recommendation.
* In most cases, the target price will equal the analyst's assessment of the current fair value of the stock. However, if the analyst doesn't think the market will reassess the stock over the specified time horizon due to a lack of events or catalysts, then the target price may differ from fair value. In most cases, therefore, our recommendation is an assessment of the mismatch between current market price and our assessment of current fair value.

Sector Recommendations

Overweight: The industry is expected to outperform the relevant primary market index over the next 12 months.
Neutral: The industry is expected to perform in line with the relevant primary market index over the next 12 months.
Underweight: The industry is expected to underperform the relevant primary market index over the next 12 months.

Country (Strategy) Recommendations

Overweight: Over the next 12 months, the analyst expects the market to score positively on two or more of the criteria used to determine market recommendations: index returns relative to the regional benchmark, index sharpe ratio relative to the regional benchmark and index returns relative to the market cost of equity.

Neutral: Over the next 12 months, the analyst expects the market to score positively on one of the criteria used to determine market recommendations: index returns relative to the regional benchmark, index sharpe ratio relative to the regional benchmark and index returns relative to the market cost of equity.

Underweight: Over the next 12 months, the analyst does not expect the market to score positively on any of the criteria used to determine market recommendations: index returns relative to the regional benchmark, index sharpe ratio relative to the regional benchmark and index returns relative to the market cost of equity.