THE POWER OF X

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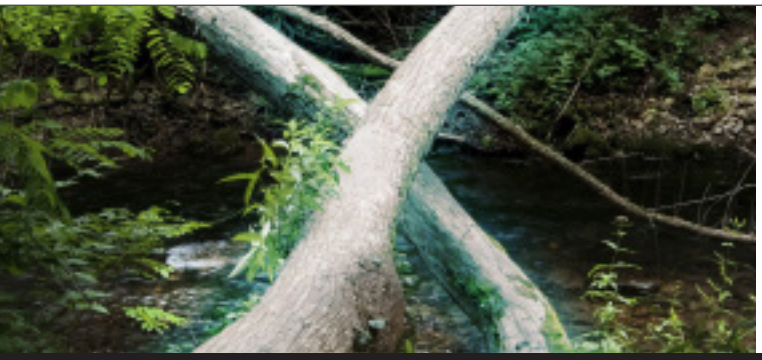

ADVANCED THERAPIES

Experts. Experience. Execution.

Regulatory Expertise in Advanced Therapies

Advanced Therapies holds the bold promise of discovering new therapeutic approaches to combat diseases that are still out of reach of traditional drugs and biologicals. Our work with innovators, regulators, key opinion leaders and investigators in this area gives us unique insight into the challenges and hurdles to be overcome as we shepherd our client's product through the development process.

Advanced Therapy Medicinal Products (ATMPs)

Advanced Therapy Medicinal Products (ATMPs) are medicines for human use that are based on genes or cells to regenerate, repair, or replace damaged or diseased tissues/cells. These products have the potential to offer ground-breaking new opportunities for the treatment of disease and injury with new treatments for damaged organs, burns, injuries, and diseases such as Alzheimer's and cancer.

ATMPs are at the cutting edge of technological advances in drug development – these innovative products will result in the ability to repair specific genes, tissues, and organs with an increased level of targeting for complex and challenging diseases.

The term "ATMP" or "Advanced Therapy" as defined in the EU includes gene therapy, somatic cell therapy, tissue-engineered products, and combination ATMPs. This terminology is equivalent to cellular and tissue-based products and gene therapy products in the US and regenerative medicinal products in Japan. All of these terms describe innovative gene and cellular therapies that are being developed within the area of Advanced Therapies.

Gene Therapy Medicines

- Contain genes that work by inserting recombinant DNA into the body and will lead to a therapeutic, prophylactic, or diagnostic effect by correcting defective genes that are responsible for specific diseases
- Delivery of DNA to target cells may involve use of viral or bacterial vectors, or other mechanisms
- Diseases such as cystic fibrosis, hemophilia, and muscular dystrophy are single-gene defects that have been gene therapy targets

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Somatic Cell Therapy Medicines

- Contain cells or tissues that have been manipulated to change their biological characteristics or are not intended to be used for the same essential functions in the body
- Will treat, prevent or diagnose a disease through a pharmacological, immunological, or metabolic action
- Stem cell products may be classified as a somatic cell therapy depending on their manipulation and use

Tissue-engineered Medicines

- Contain cells or tissues that have been modified so they can be used to repair, regenerate, or replace human tissue
- Engineering of cells or tissues involves substantial manipulation to achieve the required properties. The cells or tissues may be viable or non-viable and may contain additional substances including cellular products, chemicals, or matrices

Combination ATMPs

- Contain one or more medical devices as an integral part of the medicine
- Cells (somatic cell therapy or tissue engineered product) embedded within a biodegradable matrix or scaffold (classified as a medical device) being used to increase new bone formation in regions of atrophy would be a combination ATMP

ATMPs are known to be complex medicinal products and the technological advances in these products are often moving ahead in advance of the existing regulations. Regulatory agencies are working closely with biotechnology and pharmaceutical companies to ensure that guidance and regulations are being developed to meet the needs of the technology and ultimately the needs and safety of the patients.

Regulatory agencies recognize the need for supporting companies during the development of ATMPs and there are a number of options for scientific and financial incentives to encourage development in the area of advanced therapies.

European and US agencies provide the following support for ATMP development

- Classification of ATMPs – consultation to confirm the product meets scientific criteria for ATMP
- Orphan Drug Designation – ATMPs are often developed for rare diseases and can benefit from orphan designation and the associated incentives (approximately 65% fee reduction for ATMPs or orphan status)
- Adaptive pathways – approach to marketing approval to improve timely access for patients to new medicines, including rolling submissions, fast-track, and breakthrough designations
- US Interface and submissions to the NIH Recombinant DNA Advisory Committee
- Parallel scientific advice between the EMA and FDA
- EU SME status – financial, administrative, and procedural incentives offered to micro-, small-, and medium-sized enterprises (SMEs) once registered with the EMA
- EU certification of quality and non-clinical data for SMEs – scientific evaluation of data at any stage of ATMP development to address any potential issues at an early stage

PMDA (Japan) Considerations

- PMDA consultation for ATMPs can be requested with shorter timelines
- Priority track consultation and review for orphan drugs and products for an unmet medical need
- Expedited marketing authorization through conditional and time-limited approval options under the PMD Act

Medpace Services

Medpace Global Regulatory Affairs can advise, support, and assist clients to navigate the regulatory challenges of the development process. Regulatory experts with in depth knowledge of the latest global regulations related to advance therapy products, including Europe's Advanced Therapy Medicinal Products (ATMP) guidance.

- Provision of regulatory intelligence at national and regional levels
- Development planning for ATMP products in all major regions
- Guidance and support for regulatory agency submissions applicable to ATMPs
- Review and gap analyses of client submission packages and documentation
- Support throughout all regulatory agency procedures for ATMPs
- Attendance and support at regulatory agency meetings

Medpace Global Regulatory Affairs

Medpace Global Regulatory Affairs is a world-class, stage-setting, and professional regulatory affairs and medical writing organization that facilitates the rapid development of safe and effective therapeutics for our clients. Our team is comprised of more than 50 experts providing coverage across all areas of clinical development through marketing authorization.

About Medpace

Medpace is a scientifically-driven, global, full-service clinical contract research organization (CRO) providing Phase I-IV clinical development services to the biotechnology, pharmaceutical and medical device industries. Medpace's mission is to accelerate the global development of safe and effective medical therapeutics through its high-science and disciplined operating approach that leverages local regulatory and deep therapeutic expertise across all major areas including oncology, cardiology, metabolic disease, endocrinology, central nervous system and anti-viral and anti-infective. Headquartered in Cincinnati, Ohio, Medpace employs approximately 2,500 people across 35 countries.