

Longevity Clinical Trials

Teaser

Q3 2021

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Every therapeutic method used in modern medicine has passed **clinical trials**. It is the most important step of drug or therapy approval for clinical use, thus a very influential factor for the market. Longevity is an emerging field of study in the modern medical approach. Therefore most of the advances are now faced with clinical trials system. **Understanding the dynamics of Longevity therapeutics in clinical studies can grant a comprehensive analysis of the market, which can be used for its improvement.**

This analytical case study contains an **unrivaled database** that offers a deeper look at the organizations, investors, and R&D facilities that are leading in terms of the number and quality of clinical trials undertaken. **Notable trials and corporations are meticulously studied and assessed. Each stage of the trial is investigated individually.** Industry meta-analysis gives unique forecasts on market trends. Companies' classification and evaluation provide insight into probable future market force distribution. Furthermore, in-depth research findings give an overview of product trends and treatment method dynamics.

Clinical trials are an ever-expanding branch of scientific investigation. Despite the fact that the majority of them do not provide great outcomes, their paradigm underpins the whole area of contemporary medicines. Recently, more and more inventive methods of conducting research in this sector have emerged, perhaps leading to a restructuring of the approach of the trial. **This analytical case study provide insights for familiarization with clinical trials present state and longevity trials role in it.**

Approach of the Report

Database

500
Companies

300
Investors

100
R&D Centers

The database was formed based on:

- the **identification of companies and R&D centers** that conduct or have conducted clinical or preclinical researches;
- the **determination of investors** that contributed money to these companies.

Applied Research and Analytics Methods

Descriptive
Analysis

Mixed Data
Research

Data
Triangulation

Comparative
Analysis

Qualitative Data
Collection

Data
Filtering

Data Sources

Media Overview
(Articles and Press Releases)

Industry-Specialised
Databases

Publicly Available Sources
(Websites)

Industry Reports and
Reviews

Relying on various research methods and analytics techniques, the analytical provides a comprehensive overview of the Clinical Trials Industry. This approach has certain limitations, especially when using publicly available data sources and conducting secondary research. Aging Analytics Agency is not responsible for the quality of the secondary data presented herein; however, we do our best to eliminate the said risks using different analytics techniques and cross-checking data. Please note that we did not deliberately exclude certain companies from our analysis. Nor was it due to the data-filtering method used or difficulties encountered. The main reason for their non-inclusion was incomplete or missing information in the available sources.

Executive Summary

Throughout history, discovering and creating new drugs played a crucial role in the life extension enterprise. After basic approach of clinical trial was described in 18th century, the efforts were made to refine the design and statistical approaches. These were followed by changes in regulatory and ethics milieu. Since then, clinical trials have evolved into a standardized procedure, focusing on scientific assessment of treatment efficacy and guarding the patient's safety.

This analytical case study includes an unexampled database which provides a closer look at the companies, investors, R&D centers leading by the amount and quality of clinical trials they conducted. Notable trials and companies are reviewed and analyzed precisely. Each phase of the trial is examined separately. Market meta analysis provides distinctive prognosis on market trends. Companies categorization and assessment shed insight on possible future forces distribution. In addition, deep research analysis provide overview on product tendencies and treatment approaches dynamics.

Main Features of the Analytical Case Study

Robust Market Players Database

Overview of Clinical Trials on All Phases

In-depth Review of Notable Clinical Trials

Detailed Assessment of Longevity Clinical Trials

Hallmarks of Aging within Clinical Trials

Precise Analysis of Age-associated Disease Studies

Clinical Trial Market Overview and Predictions

Longevity Clinical Trials Framework

Categorization of companies is **supported by literature data** regarding hallmarks of aging and age-related diseases. In addition to most significant vectors of study, **developing sectors such as research outsourcing** with *in silico* approaches were distinguished. Thus, framework not only bring **comprehensive view on market** but also **sustains relevance in advance to development** of technologies and research approaches.

By Research Field

Altered
Signaling

Cell
Senescence

Genomic and
Epigenomic Instability

Longevity

Loss of
Proteostasis

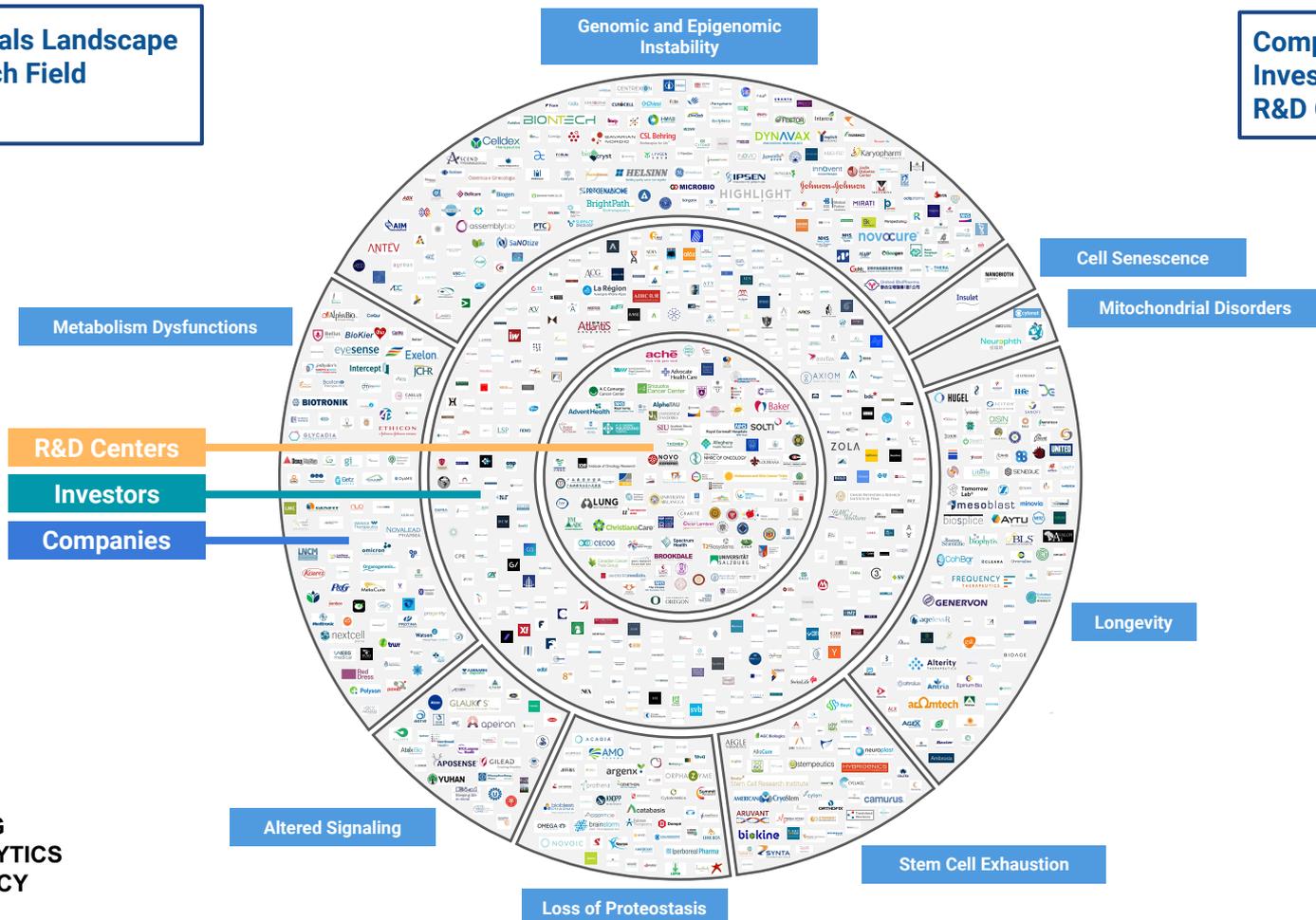
Metabolism
Dysfunctions

Mitochondrial
Disorders

Stem Cell
Exhaustion

Clinical Trials Landscape by Research Field Q3 2021

Companies – 500
Investors – 300
R&D Centers – 100



Concept of Preclinical Developments

The **preclinical study** is a stage of drug development that precedes clinical trials. It is necessary because there is a need to study the potential toxicity of a substance (or a device) before clinical trials.

The main goal of preclinical development is to **test different characteristics of a potential drug:** pharmacodynamics and pharmacokinetics, ADME (absorption, distribution, metabolism, excretion), and safe dosage for human testing.

There are two types of preclinical studies: *in vitro* and *in vivo*. ***In vitro*** means that biological agents, such as proteins, enzymes, and cells, are outside of their normal biologic context. It is also called "test-tube experiments" because the experiment is conducted in the lab. ***In vivo*** means that an experiment is conducted on the whole living system (animal tests).

Types of Preclinical Developments

Type	Characteristic
Screening	Presence or absence of certain phenomena
Isolated organs	Testing effect on specific organs
Bacterial cultures	Mostly testing microbiome reaction
Animal models	Modeling drug activity in living animals
General observation	Search for any hidden effects
Pharmacodynamics	Determination of mechanisms of action
Confirmatory tests	Milestone tests to pass different phases of trial
Pharmacokinetics	Studies of chemical metabolism of the drug inside an organism
Quantitative tests	Estimate dose-response relationship
Toxicity tests	Determine the toxic effects of a drug

Concept of Clinical Trials

Clinical trials are experiments that do as a part of clinical research that **determines the safety and efficacy of new medications**, healthcare devices, diagnostic products, or behavioral interventions.

The first step of a drug trial is preclinical development, but it can not give 100% reliable information about pharmacokinetics, pharmacodynamics, and toxicity for people. Scientists can receive only approximate conclusions from their preclinical research. That is why they **need to do human experiments**.

Also, clinical trials are separated into phases. Three main phases are obligate - phases **I, II and III**. Two phases are additional (phase 0 and IV).

There are two classifications of clinical trials: **observational and interventional** studies. Observational study means that the investigators only observe the subjects and measure their outcomes but don't interfere or manage the process. Interventional study means that the investigators give the research subjects an experimental drug or a medical device. Then the researchers assess how the subjects' health changes.

Phases of Clinical Trials

Number of Phase	Purpose	Group Sizes
Phase 0	Pharmacokinetics and pharmacodynamics	10-15 patients
Phase I	Toxicity and safety	20-100 patients
Phase IIa	Optimal dosage with minimum side effects	50-300 patients
Phase IIb	Preliminary efficacy of the drug in comparison with placebo	50-300 patients
Phase III	Efficacy of the drug in comparison with standard treatment	300-3000+ patients
Phase IV	Pharmacovigilance and technical support of a drug, addition purposes	-

Longevity and Clinical Trials

Modern-day approaches to clinical trials were first established in the 1930s. This fact itself indicates that those approaches should be reviewed and changed. Due to active market expansion and technological progress quantity of emerging trials is growing every year. But the success ratio of traditional clinical trials has begun to decline gradually, no longer **exceeding 8-10%**, while the **failure ratio raises to 92%**. If the recent trend in clinical trial success is preserved, their financial profits will risk plateauing.

This analytical case study will show that **there are vanishingly few clinically validated drugs that reliably extend healthy human longevity**. According to prediction, the success rate of relevant drugs from mice to humans is 10% in BioTechnology in general. A mere 1% in Longevity-related subsectors means that **only 1% of Longevity-relevant clinical trials will succeed in humans**. It turns out that the overall approach to clinical trials is itself a significant limiting factor in BioTech and Longevity in particular.

Recent discoveries in the fields of cell and molecular biology brought some insights into the process of aging. Partial understanding of processes of aging opened room for extensive development of potential drugs to maintain Longevity.

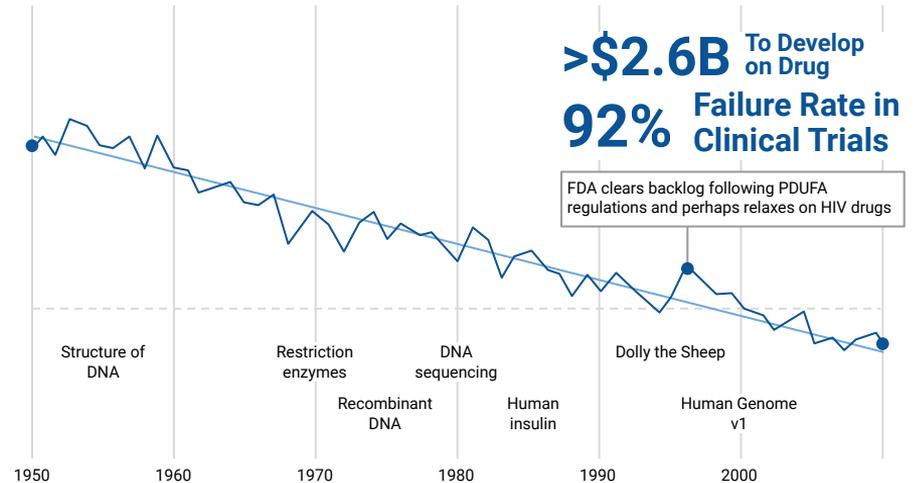
Modern gerontology research aims to **slow down** the fundamental biological processes that accompany or cause aging. These processes include but are not limited to cell aging, impaired cellular energy regulation, mitochondrial dysfunction, age-related stress resistance, and impaired proteostasis.

Source: Deep Knowledge Analytics

Aging Analytics Agency

Pharma Efficiency is Declining Steadily

MNEs per \$B R&D Spent (Inflation Adjusted)



Note: Dynamics of pharma clinical trials can be effectively used as reference for Longevity clinical trials efficiency.

The Hallmarks of Aging

Genomic Instability

Aging can be the consequence of increased DNA damage accumulation. This is due to physical, chemical, and biological agents, as well as DNA replication errors, spontaneous hydrolytic reactions, and reactive oxygen species (ROS).

Telomere Attrition

Telomeres are the chromosomal regions located on the ends of chromosomes. They tend to become increasingly shorter after each DNA replication. When this sequence ends, the cell dies. Telomerase deficiency in humans is associated with age-related diseases.

Epigenetic Alteration

Epigenetic changes involve alterations in DNA methylation, post-translational modification of histones, and chromatin remodeling. It can lead to abnormal function of cell.

Loss of Proteostasis

Proteostasis involves mechanisms for the stabilization of correctly folded proteins, as well as mechanisms for the degradation of abnormal proteins. These processes tend to change during aging.

Deregulated Nutrient Sensing

Nutrient sensing includes trophic and bioenergetic pathways, such as insulin and IGF-1, signaling pathways, and other systems (mTOR, AMPK, and sirtuins).

Mitochondrial Dysfunction

There is a noticeable reduction in ATP generation and increased electron leakage in the respiratory chain caused by aging. It is associated with mitochondrial damage.

Cellular Senescence

Cellular senescence can be defined as a stable arrest of the cell cycle. The accumulation of senescent cells in aged tissues can lead to age-related disease progression.

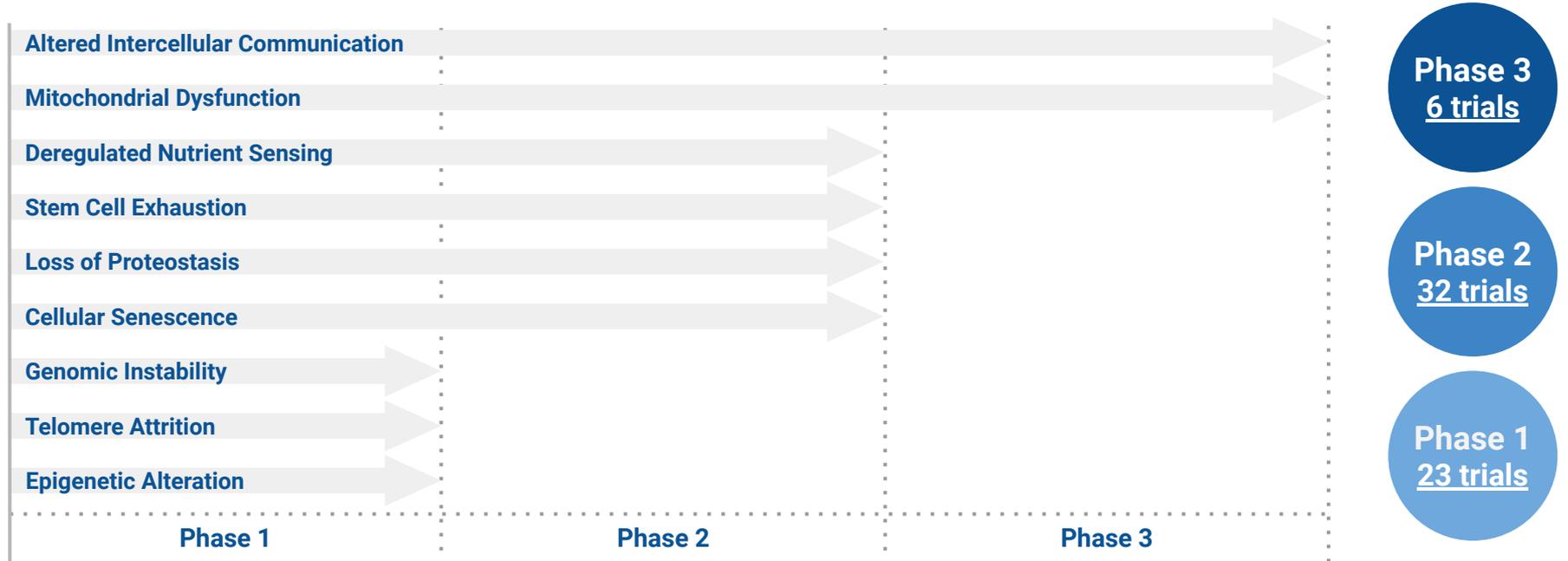
Stem Cell Exhaustion

Stem cells are cells from which all other cells with specialized functions are generated. There is a substantial decrease in the number of stem cells during life. Recent studies suggest that stem cell rejuvenation may reverse the aging phenotype.

Altered Intercellular Communication

Neurohormonal signaling tends to be deregulated in aging as inflammatory reactions increase, while immunosurveillance against pathogens and premalignant cells declines.

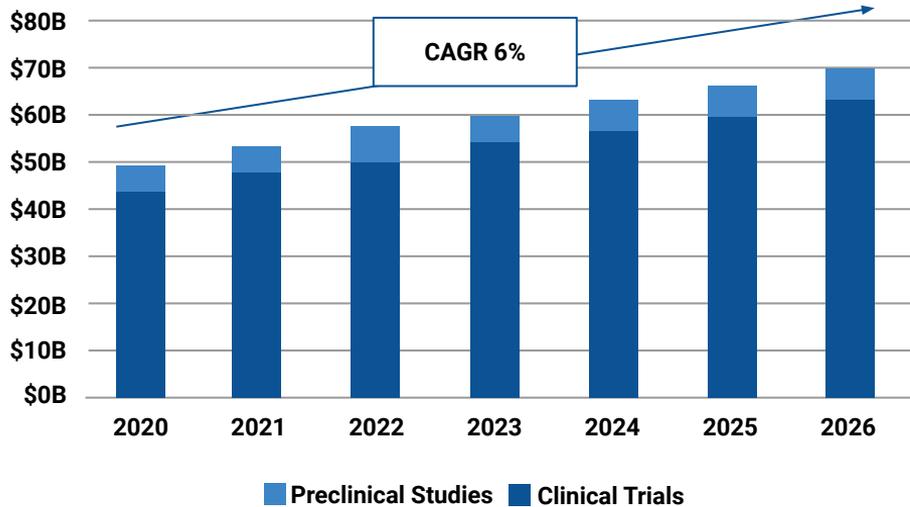
The Hallmarks of Aging Targets in the Clinical Trials



Note: modern attitude to clinical trials is partially conservative, some companies do not disclose information regarding their research to fortify their market position. That is why any information database is not complete. This analytical case study is based on a database consisting of all publicly open trials. Respectively, the information represented in this graph is based on this database as of Q3 2021 and will be developed in the second iteration of the project.

Clinical Trials Market at a Glance

Preclinical Studies and Clinical Trials Market Size, 2020-2026



The global **Preclinical Studies and Clinical Trials Market Size** accounted for **\$48.8B in 2020** and is projected to grow an average **CAGR of 6%** from 2020 till 2026 to reach **\$70.5B**. Despite increasing interest in recent years, the industry remains underestimated and has high growth potential.

The key market drivers include **rising life expectancy and disposable income; increased R&D spending of new drugs** by pharmaceutical companies. Due to high competition, companies are looking to **diversify their product portfolio with specialty drugs**. Additional **demand for clinical and preclinical services arises** because more pharmaceutical companies outsource large parts of R&D, primarily to clinical research organizations, to reduce costs.

3.4%

Global GDP Growth
in 2021

3.7%

Global Spending Growth on
Pharma R&D in 2021

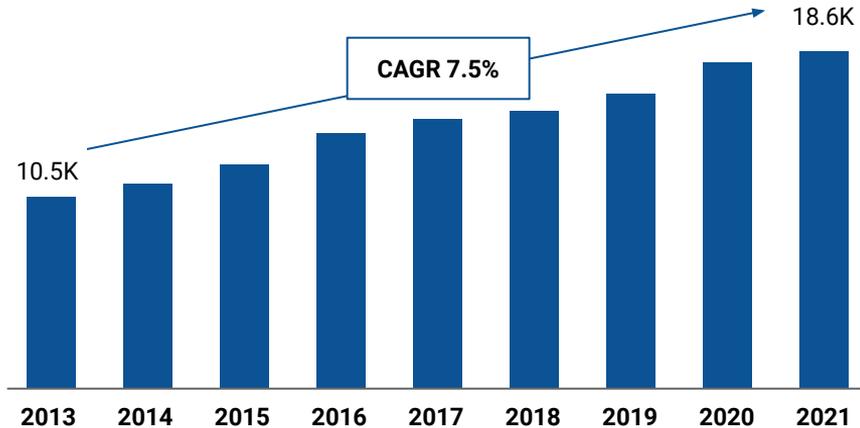
0.24%

Life Expectancy
Growth in 2021

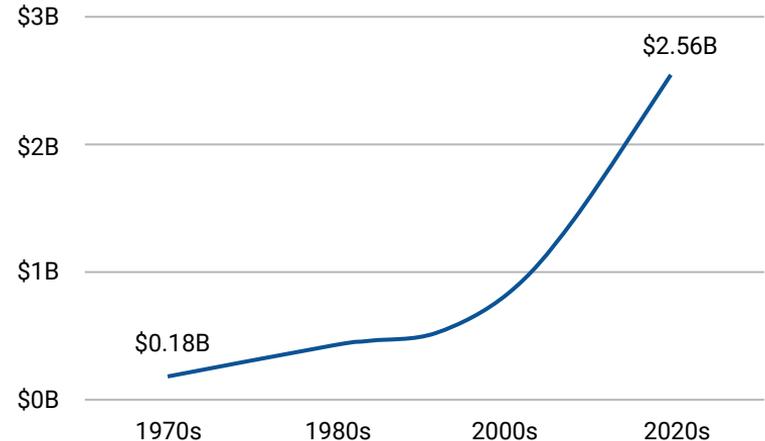
Sources: Grand View Research, Statista, IMF, Macrotrends

Clinical Trials Market at a Glance

Number of Drugs in the R&D Pipeline Worldwide, 2013-2021



Cost of Development Drugs in USA, 1970-2021



The development of a new innovative product requires significant resources and time. After the initial research, drug manufacturers must conduct a series of trials to obtain approval. The increase in the number of drugs in development **increases the need for more preclinical studies and clinical trials**. The cost in the 2020s showed that **\$2.5-2.6B for development** to include approximate average out-of-pocket cost of **\$1.4B and time costs** (the expected returns that investors forego while a drug is in development) of **\$1.2B**. In addition, the estimated cost of post-approval research and development of **\$0.31B** boosts the **full product lifecycle cost** per approved drug close to **\$3B**.

Clinical Trials Market at a Glance

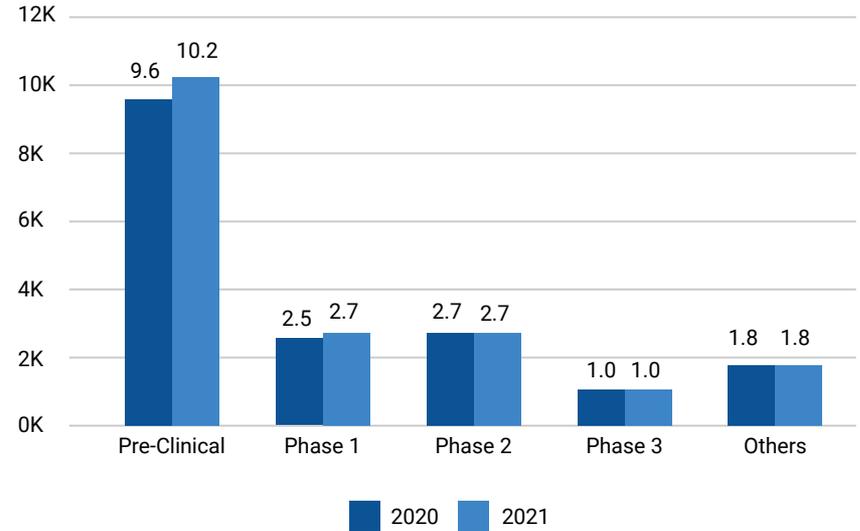
Preclinical studies involve extensive preclinical studies that yield preliminary efficacy, toxicity, pharmacokinetic, and safety information, testing by using test tubes, cell culture, or animals.

The global **Preclinical Studies Market Size** accounted for **\$5B in 2021** and is projected to grow an average **CAGR of 8.1%** from 2020 till 2026 to reach **\$7.4B**.

In 2016 USA passed the 21st Century Cures Act, which accelerated the **approval process for advanced drugs and medical devices**, which accelerated the growth of the market, where the USA share in 2020 was **47.7%**. The largest share of the global market income in 2020 was occupied by **toxicological preclinical studies** with a share of **61.1%** due to a rise in the outsourcing of noncore preclinical CRO studies and high adoption in toxicology tests.

Sources: Grand View Research, Statista

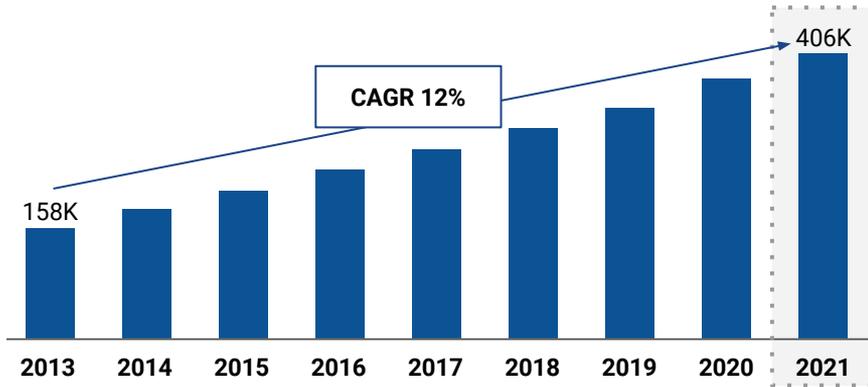
Number of Drugs in the R&D Pipeline Worldwide, 2020-2021



Note: Others - trials that have alternative approach to studies due to local policies.

Clinical Trials Market Overview

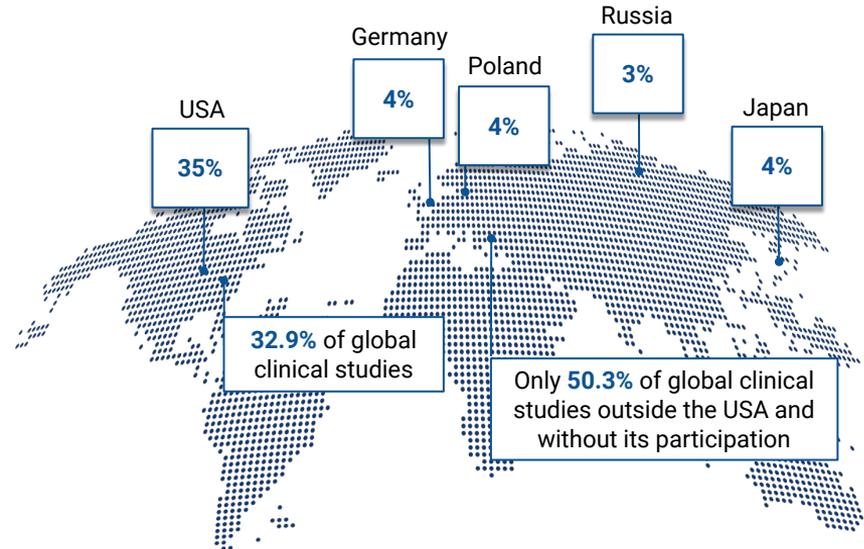
Total Number of Registered Clinical Trials Worldwide, 2013-2021



Clinical trials are the main part of the drug development process, because they determine the safety and efficacy of the drugs effect on the human body. The global **Clinical Market Size** accounted for **\$47.4 B in 2021** and is projected to grow an average **CAGR of 5.9%** from 2020 till 2026. The **complexity** of conducting clinical trials in U.S. **has grown by 61%** from 2001 to 2015, which increases the demand for specialized clinical trials companies.

Sources: Grand View Research, Statista, ClinicalTrials.gov, Research Gate

Top-5 Clinical Trials Participants by Country in 2021



32.9% of global clinical studies

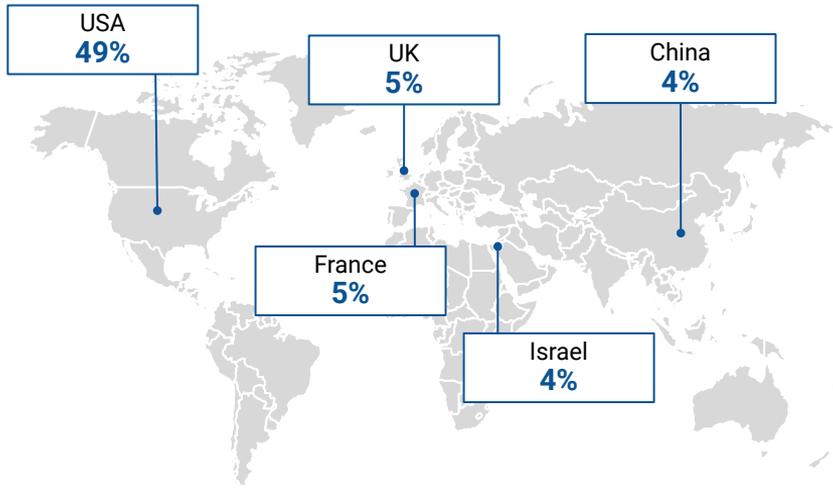
Only 50.3% of global clinical studies outside the USA and without its participation

Probability of Success for Drugs in the USA in Different Development Clinical Trial Phase

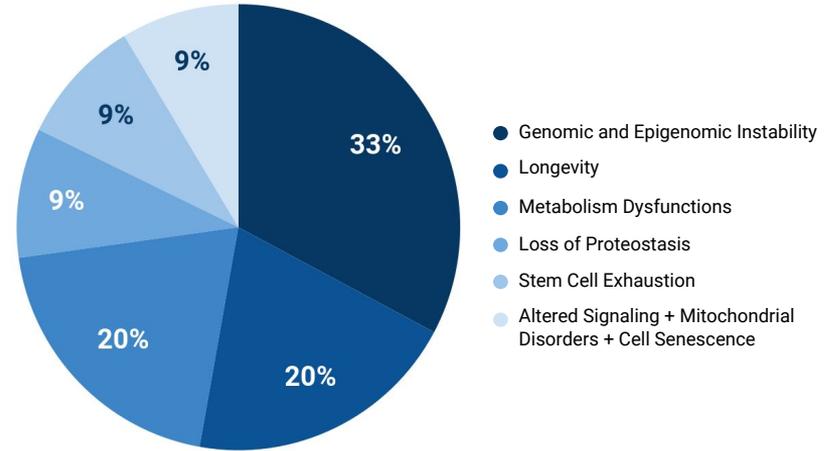


Clinical Trials Market Overview

Distribution of Companies by Country, %



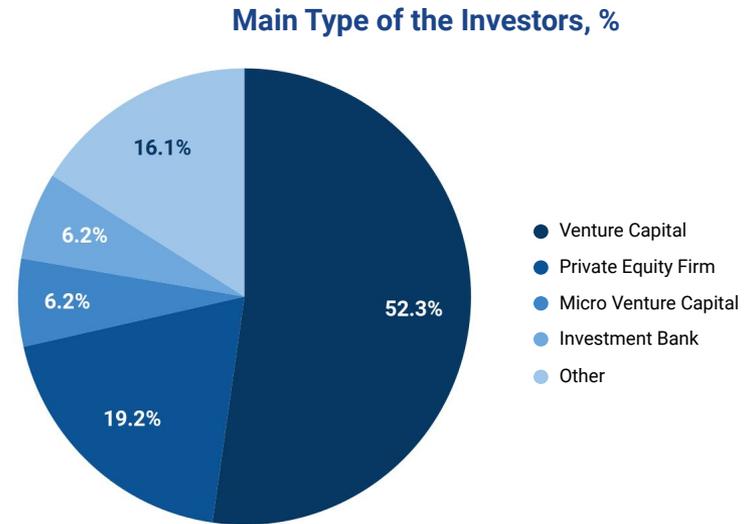
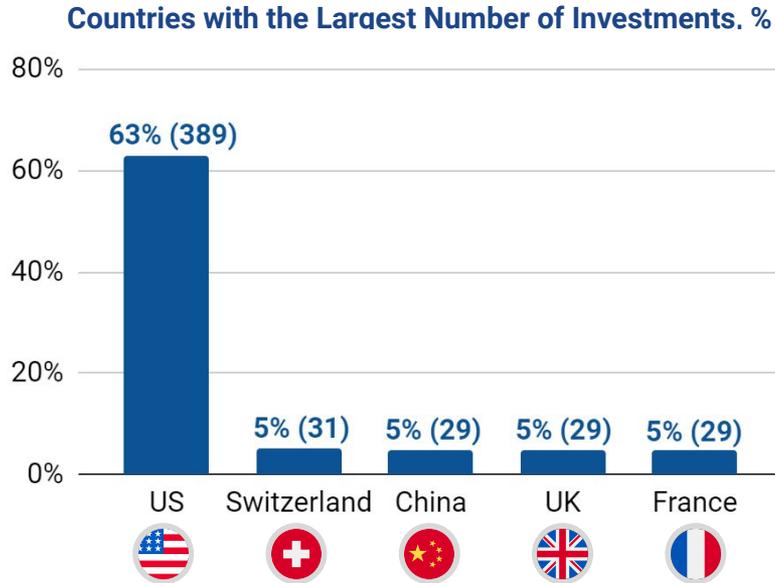
Distribution of Clinical Trials by Category, %



The **vast majority** of companies that conduct Clinical Trials is located in the **United States** and accounts for **49%** of the whole range of analyzed companies. The United States is followed by the **European region**, particularly by the **United Kingdom** and **France** with the total companies amount equal to **5%** of all companies in **both** of the countries.

The main domains in which Clinical Trials are being conducted are **Genomic and epigenomic instability**, **Longevity** and **Metabolism dysfunctions** which account for **33%**, **20%** and **20%** of all Clinical Trials **respectively**.

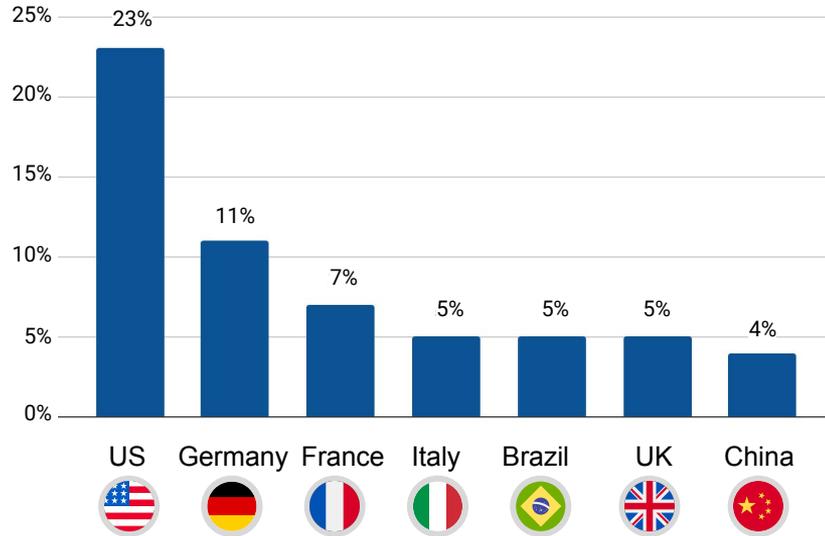
Clinical Trials Market Overview



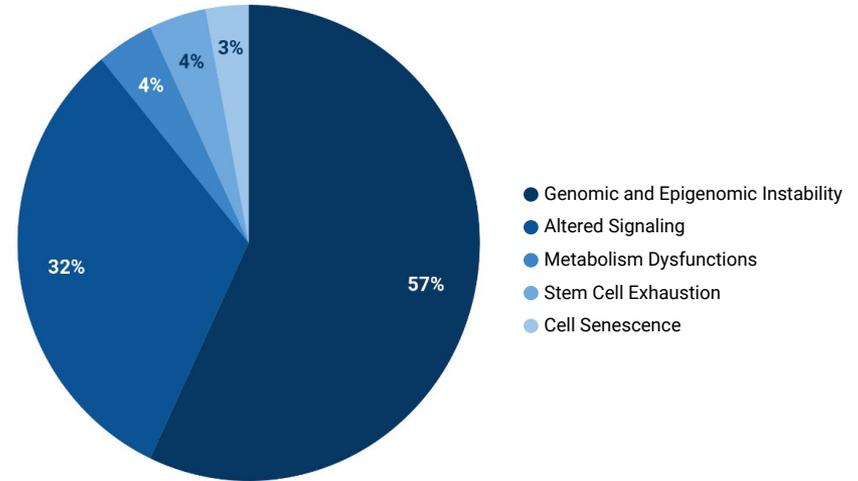
The main part of the investments in Clinical Trials was made by investors from the **United States** and accounts for **63%** of the total investments amount. Investors from **Switzerland, China, United Kingdom** and **France** follow the United States with **5%** of total investments made in each country. Most of the investors are **Venture Capitals** which constitute more than half of all Investors (**52.3%**). The other main types of Investors are **Private Equity Firm (19.2%)**, **Micro Venture Capital (6.2%)** and **Investments Bank (6.2%)**.

Clinical Trials Market Overview

Countries with the Largest Number of R&D Centers, %



Distribution of R&D Centers by Categories, %



More than a fifth of leading R&D centers that conduct clinical trials on longevity-related topics are situated **in the United States**. Around **27%** of R&D centers are allocated **in the European region**: 11% - in Germany, 7% - in France, and 5% each in Italy and the United Kingdom. Among the top 5 research directions, **53%** of R&D centers are engaged in the field of **Genomic and epigenomic instability**. Another **third** of centers provide studies in the field of **Altered signaling**. **Metabolism dysfunctions**, **Stem cell exhaustion**, and **Cell senescence** are developed by **4%**, **4%**, and **3%** of centers **respectively**.

Source: Aging Analytics Agency analysis

Preclinical Development of Drugs for Age-related Conditions

In modern clinical study approach prior to testing drug or therapeutic approach on humans researchers are obligated to complete set of preclinical studies.

That is part of research which is **focused on testing possible toxicity or sometimes therapeutic effect on models**. Preclinical studies are designed specifically to move to clinical studies.

Classical approach to conducting preclinical studies involves **animal testing**. But with development of new ways of modeling substances interactions and reactions some of studies could be moved to computer modeling in the future. This vector of research is currently developing, emergence of companies which digitally assist with modeling proves this tendency.

The most common conditions modeled at present moment are: **Neurodegenerative disease, Aging of a tissue/organ, Cardiovascular disease, Bone disease**.

Study Models

Model	Characteristics
<i>In Vitro</i>	High speed, low cost, limited to molecular level
Rodents	Low cost, fast, almost universal
Swine	Whole range of conditions, expensive, long-lasting
Non-human Primates	Whole range of conditions, expensive, long-lasting
Digital	Short term, cheap, limited to cell level

Note: digital approach is believed to be the most time and cost effective, as well as that it is more ethical, but it is yet not approved for trial reports. Which leads to duplication of studies for different tests.

Longevity Drugs in Preclinical Development

Company	Drug Candidate	Company	Drug Candidate
	Enzymes which break glucosepane to restore tissue plasticity		GlycoSENS: destroys glucosepane crosslinks to restore movement to the structural proteins
	Mitochondrial/Metabolic therapies for aging, to restore normal function of different cells		Cyclodextrins to fight 7-ketocholesterol and remove artery plaques which causes heart diseases
	Senolytic drugs to target the pathways of aging in senescent cells, thus reduce senescence potential		Peptope and CAR-M immunotherapies against transthyretin amyloidosis
	Senosuppressors - drugs to decrease effect of senescent cells on organism		USP14 inhibitors to treat Alzheimer's and Parkinson's diseases
	Medicines intended to improve egg cell quality and restore fertility in women of advancing age		Using machine learning to help it map new genes that were not previously recorded

Age-associated Disease Clinical Trials

The percentage of national **populations over age 65 has been increasing** in the last 10 years and **will continue to rise** for another 20 years due to improved life expectancies.

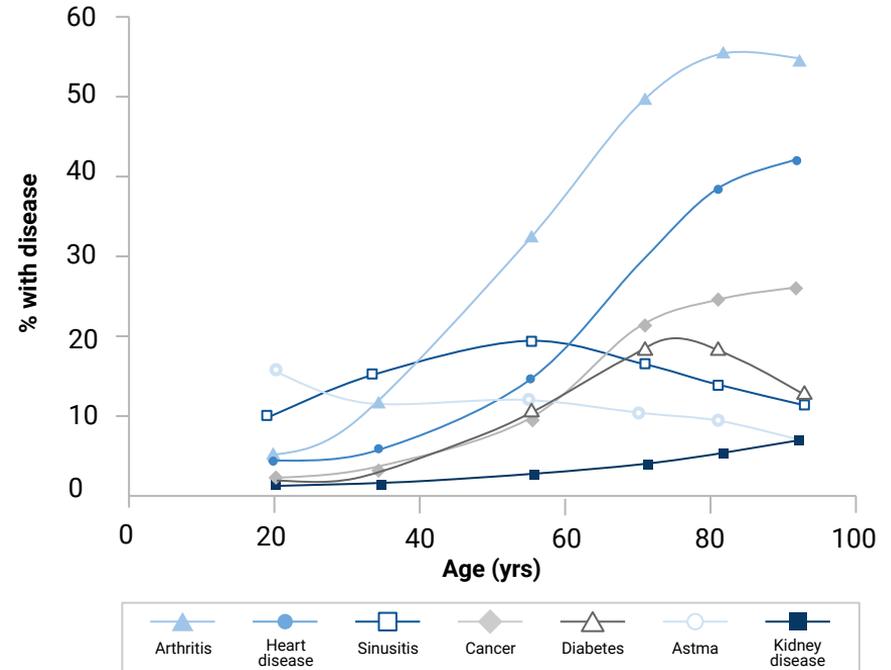
It leads to rise of age-associated diseases frequency in population. Most of longevity clinical trials are focused on specific problems - **certain age-associated disease**.

It is hard to focus on distinct pathologies because in process of aging every organ of body loses its effectiveness, but most common pathologies are in scope of clinical trials. Such groups of diseases are: **cancer, CNS conditions, diabetes, chronic pain and autoimmune reactions**.

Yet treatment of those conditions is only symptomatic due to complicated etiology.

There is no universal solution, but some therapies can help lower the risks or manifestations, such as: **senolytics, stem cell therapies, anti inflammation therapies**.

Age-associated Disease Diagnosis Ratio



Note: this graph represents frequency of age-associated disease diagnosis in population relatively to age

Longevity Clinical Trials

Treatment of any disease starts with its diagnostics, that general rule perfectly applies to aging.

For a long time topic of precise determination of biological age was heavily argued, but lately new unified approaches were accepted by community. Mostly, **modern diagnostics of aging is based on detection and evaluation of biomarkers in different samples.** In case of existence of sample reference taken earlier in life, it is possible to determine biological age with accuracy.

Longevity clinical trials are focused on finding unified solution to fight aging, such solution in theory should expand life expectancy and provide better quality of life in elderly people.

Due to that, most promising vectors of research are; stem cell therapies and senolytics. Some of the approaches have already shown significant results, but yet only in animal models.

Source: clinicaltrials.gov

Blood-based Biomarkers for Geroscience-guided Trials

Biomarker	Underlying Biologic Process & Role
IL-6, CRP TNFR1I	Inflammation & Intercellular Signaling Interleukin 6 (IL-6) is a proinflammatory cytokine and Tumor Necrosis Factor- α RII is a TNF α receptor involved in acute-phase response. C-Reactive Protein (CRP) is an acute phase protein produced in response to inflammation. Cytokine dysregulation is driver of pathophysiologic processes leading to disease, functional decline, frailty, and death.
GDF15	Stress Response & Mitochondria Growth Differentiation Factor 15 (GDF15) is a member of the TGF- β superfamily robustly associated with mortality, cardiovascular events, cognitive decline and dementia. GDF15 is increasingly recognized in mitochondrial dysfunction, and as a biomarker of aging.
IGF-1 Insulin	Nutrient Signaling Disruption of the insulin/ insulin-like growth factor (IGF-1) signaling pathway is implicated in longevity in animal models. In humans, IGF-1 and fasting insulin are responsive to caloric restriction, and low IGF-1 in growth hormone receptor deficiency conveys disease protection
Cystatin-C	Kidney Aging Cystatin-C, an extracellular inhibitor of cysteine proteases, is a marker of renal disease and aging. It is an independent risk factor for all cause and CVD-related mortality, and multi- morbidity, and higher levels are consistently associated with poor physical function and cognition.
NT-proBNP	Cardiovascular Health B-type natriuretic peptides (BNP, NT-proBNP) are secreted in response to cardiomyocyte stretching to decrease vascular resistance. NT-proBNP has a greater-half life and accuracy compared with BNP and is used to diagnose and establish prognosis for heart failure.
HGBA1c	Metabolic Aging Glycated hemoglobin (hemoglobin A1c. HGBA1c) is formed in a non-enzymatic glycation pathway and is a marker for 3-mo average plasma glucose. High HGBA1c reflects poor glucose control, and in older nondiabetics is strongly associated with death, chronic disease, and functional decline.
Molecular Signature	Epigenetic, Interdependent, Multi-Omic Data intensive molecular platforms can explore global changes in epigenetic, transcriptomic, proteomic, and proteostasis, and small metabolite signatures. These approaches may better capture complex and multifactorial processes underlying aging.

Market Trends

The graph clearly illustrates the primary trend - **the clinical trials market is growing annually by an average of 30%**. Recently, the increase in the number of clinical trials has been **provoked by the synergy of 4 key factors** - market trends.

Key Market Trends

Vaccine Trials on Rise

Remote Trials Increase

Clinical Trials Disruptions

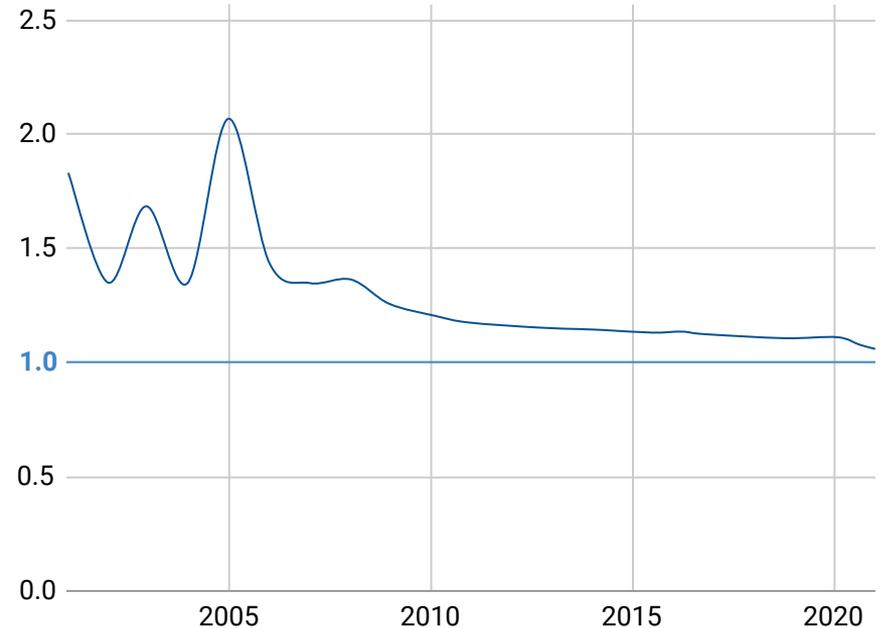
New Technologies in Clinical Trials

Determinant

COVID-19

Digitalization

Relative Increase in Clinical Trials, 2000-Q1 2021



Note: despite a precipitous drop in the number of clinical trials in 2005, the market continues to grow steadily as the relative increase is greater than 1.

Key Takeaways



The preclinical study is a stage of drug development that precedes clinical trials, and by the present protocol, is mostly conducted in animal models. However, it's becoming evident that the preclinical stage can now be partially transferred to in silico research. At its current state, this method is more reliable and resource-saving. Redefining the approach to preclinical studies is an upcoming event that will happen within ten years.



There are vanishingly few clinically validated drugs that reliably extend healthy human longevity. Clinical trials are less than 1% succeeding in humans after animal trials. At the same time, developments in AI and modeling sphere are pushing market to better results which promises further revision of research approach.



While clinical studies generally dominated the attention of investors, the global Preclinical Market Size is projected to grow an average CAGR of **8.1%** compared to only **5.9%** of clinical trials. The difference in growth can be explained by the USA **21st Century Cures Act, which accelerated the approval process for advanced drugs and medical devices.**



The global Preclinical Studies and Clinical Trials Market Size accounted for \$48.8B in 2020 and is projected to grow **an average CAGR of 6% from 2020 till 2026 to reach \$70.5B.** Despite increasing interest in recent years, the industry remains underestimated and has high growth potential.



The cost of developing a new drug increased tremendously in the last 50 years, **being up to 25 times higher in 2020s than in 1970s and is only projected to grow.** This partially explains a relatively new longevity drugs are in clinical trials pipeline.

Key Takeaways



While few of clinical trials examined dealt with aging directly, **the vast majority of clinical research is dealing with age-related conditions** due to higher market interest in precision drugs for specific disease. **Longevity trials** are focused on **increasing individuals lifespan and increasing life quality** at a later age. Most of them are now focused on fighting **cell senescence and restoring regenerative potential**.



Modern attitude to clinical trials is partially cocervative, some companies do not disclose information regarding their research to fortify their market position. That is why **any information database is not complete**. Current analytical case study is based on **self-prepared database consisting of all publically open trials**.



Out of nine recognized hallmarks of aging, only two, namely **altered intercellular communication and mitochondrial dysfunction, have drugs that passed onto Phase 3** of clinical trials. This means that while the need for such medicines is recognized, **the progress of obtaining viable products is still quite slow**.



The recent growth of clinical trial market is fueled by the synergy of 4 factors - **vaccine trials on rise, remote trials increase, clinical trials disruptions, and new technologies**. While first 2 market trends are projected to level off after the COVID-19 pandemic, the latter ones are here to stay, promising continued development of the industry.



Clinical trials is a continuously expanding field of scientific study. Although most of them do not bring successful results, the whole field of **modern therapeutics is based on their paradigm**. Lately, more and more innovative ways of conducting research in this field emerge, thus leading to potential reorganization of the whole process. **Enormous funding of drug development sphere** will persuade continuous progress and development as result, **requiring deeper analytics for precise overview**.

Possibilities for Further Improvements

Understanding that Clinical Trials Industry development is an **ongoing process** means that the project needs to be further improved. In particular, the second iteration of this analytical case study will improve on several aspects of the research approach.

The company, investor and R&D centers **database will be further expanded** to accommodate for rising startups and older companies pivoting towards expansion of their clinical trial rollout efforts. This will lead to increased selectivity of top 500 companies in the database.

Additionally, **deeper analysis on failed and planned trials as well as AI-based research** will be performed.

For broader understanding **law limitations and policies** on clinical trials in different countries will be assessed.

Profound research on products and treatment approaches will be expanded.

With several predictions about Clinical Trial Market trends being made, a follow-up is needed to recognize parts of the forecast that would turn out to be accurate, and further calibrate the methodology that allowed such predictions to be made.

Avenues for Further Improvement in the Second Iteration of the Project

Database Expansion

Further Integration of Biomarkers of Longevity

Updates on the Most Notable Clinical Trials

Follow-up on Predictions Made in the First Iteration

Increase Number of Deeply Studied Trials

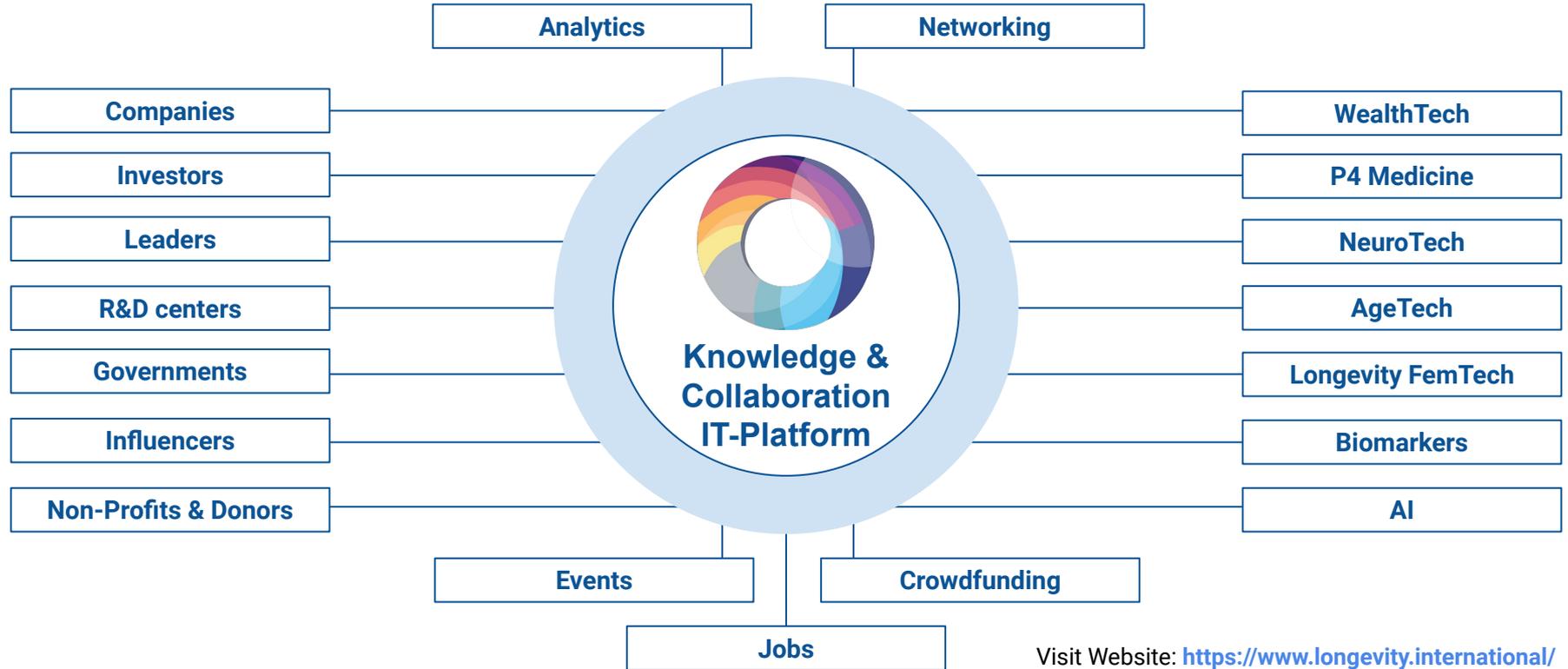
Separate Research on Outsourcing Companies

Deep Analysis of AI Implementation

Broad Assessment of Failed or Planned Trials

Description of Law Limitation Difference in Countries

Longevity.International: One-Step Platform for Longevity Industry Knowledge



Visit Website: <https://www.longevity.international/>

Longevity Governance Big Data Analytics Dashboard

Market Intelligence

Longevity Governance Market Intelligence

Full Analysis

Interactive Mindmaps

SWOT Analysis

Dynamic Charts

Full Big Data Analysis



View More

Dashboard Parameters

DATA POINTS

11984

PARAMETERS

240

REGIONS

50

LAYERS OF FRAMEWORK

6

DYNAMIC CHARTS

100

SWOT ANALYSIS PROFILES

50

SWOT Analysis



View More

Longevity Governance Market Intelligence

Pre-Subscribe for Beta

COVID-19 Dashboard

3D Visualization

Search Engine

Longevity Governance Search Engine

Benchmarking Charts

Major Trends

Practical Recommendations

Big Data Framework

National Healthy Longevity Interactive MindMaps

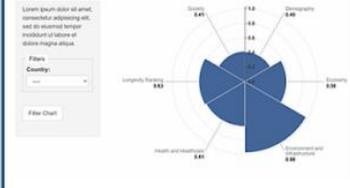


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Longevity Progressiveness 3D Visualization



Longevity Progressiveness Benchmarking Charts



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Longevity Governance Search Engine

Health-Adjusted Life Expectancy (HALE) Gap and Life Expectancy

Health-Adjusted Life Expectancy (HALE) Benchmarking

Visit Dashboard: <https://www.aginganalytics.com/longevity/governance-dashboard>



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Link to Full Report:

<https://analytics.dkv.global/longevity-clinical-trials-report.pdf>

E-mail: info@aginganalytics.com

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