

Advanced Cosmetics

Proprietary Version

Q2 2021

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Advanced Cosmetics is a high-tech direction of modern cosmetology, aimed at correcting aesthetic imperfections and age-related changes, using a personalized approach to the client, based on innovative developments and the achievements of contemporary science and medicine.

This **analytical case study** mainly focuses on **an in-depth analysis of the top-10 advanced technologies** and a **detailed SWOT analysis of the top-50 companies** that use and develop these technologies in operations. The separate chapter of the report is devoted to **the overview of a recommended set of advanced procedures**, such as cryosauna, electrical muscle stimulation, and intermittent hypoxic training. In addition, an analytical case study provided information about **anti-technologies** - the technologies available in the market but are counterproductive or harmful.

The Advanced Cosmetics technologies and methods discussed in this review are not limited to superficial and short-term cosmetic effects and represent an effective alternative to plastic surgery methods.

The Advanced Cosmetics approaches are characterized by precise diagnostic methods, personalization, selection of individual therapeutic and preventive means suitable for the body's biochemical, physiological, and genetic characteristics, allowing to draw up an optimal plan for cosmetic procedures.

Approach of the Report

Database

50
Companies

25
Investors

The database was formed based on:

- the **identification of companies** that use the top-10 advanced technologies that use and develop these technologies in operation;
- the **determination of investors** that contributed money to these companies.

Applied Research and Analytics Methods

**Descriptive
Analysis**

**Mixed Data
Research**

**SWOT
Analysis**

**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 Advanced Cosmetics 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

This analytical case study was compiled to give a detailed systematic **description of advanced practically applicable technologies and companies in cosmetics**, highlighting their advantages and disadvantages, predicting the development of the relevant market, and determining the degree of technology relevance at the current time.

During the last years, the **cosmetics market has become more closely related to the health and high technology markets**. That is why today's advanced cosmetics are more than a simple correction of the skin condition or improvement of the aesthetic appearance. It is a high-tech direction of modern cosmetology that incorporates Cosmeceuticals, Nutraceuticals, Aesthetic Medicine, Physiotherapy, and Apparatus Cosmetology.

Advanced cosmetics technologies as part of the appropriate market **have significant economic potential**, evidenced by the increase in the capitalization of the beauty and health care market, the market's stable growth, and the active development and improvement of technologies in this area. Most importantly, advanced cosmetic technologies offer something difficult to refuse – health, beauty, and self-confidence.

Top-10 Advanced Technologies

**Autologous
Stem Cells**

**Autologous Stem Cells for
Face Skin Rejuvenation**

**Microbiome of the
Body**

**Microbiome of the
Face**

**Oral
Hygiene**

**Fat Optimization,
Weight Optimization**

**Muscle
Recovery**

**Facial Skin and Hair, Facial
Cosmetic Surgery**

**Dietary
Supplements**

**Apparatus
Cosmetology**

Executive Summary

The primary function of **advanced procedures** is to **rejuvenate the body and prevent diseases**. The difference between advanced technologies and anti-technologies is **that anti-technology poses a more significant threat to the patient's health or has no positive effect on the body**. At the same time, it is too early to say that separate anti-technology that is considered dangerous today does not have a future as they tend to improve over time.

Advanced Procedures
Sauna
Cryosauna
Fitness
Wellness
Electrical Muscle Stimulation
Thalassotherapy
Intermittent Hypoxic Training
Bio Supplements

Anti-technologies
Fillers in Cosmetology and Aesthetic Medicine
Anti-Cellulite Products
Platelet-rich plasma in Dermatology and Cosmetology
Deep Peelings
Micropigmentation

Pay attention that any medication and procedure have risks, both procedures from the left column and anti-technologies from the right column. However, in the case of anti-technologies, health risks usually are higher and associated with many adverse effects.

Executive Summary

The **Advanced Cosmetics technologies and methods** discussed in this review are not limited to superficial and short-term cosmetic effects and represent an effective alternative to plastic surgery methods.

The **Advanced Cosmetics approaches** are characterized by precise diagnostic methods, personalization, selection of individual therapeutic and preventive means suitable for the body's biochemical, physiological, and genetic characteristics, allowing to draw up an optimal plan for cosmetic procedures.

All the technologies described in the analytical case study **are already in use, available**, and ready for further research. That is why this **report is valuable for people prepared to test the effects of applied science on themselves.**

Understanding that technologies don't stand still means that the **project needs to be further improved.** In particular, the second iteration of this analytical case study **will describe the technologies shown in the figure on the right** in more detail.

Technologies that Will Be Analyzed in the Second Iteration of the Project

Hormones in Cosmetology

Apparatus (Hardware) Diagnostic of Skin

Aesthetic Dentistry

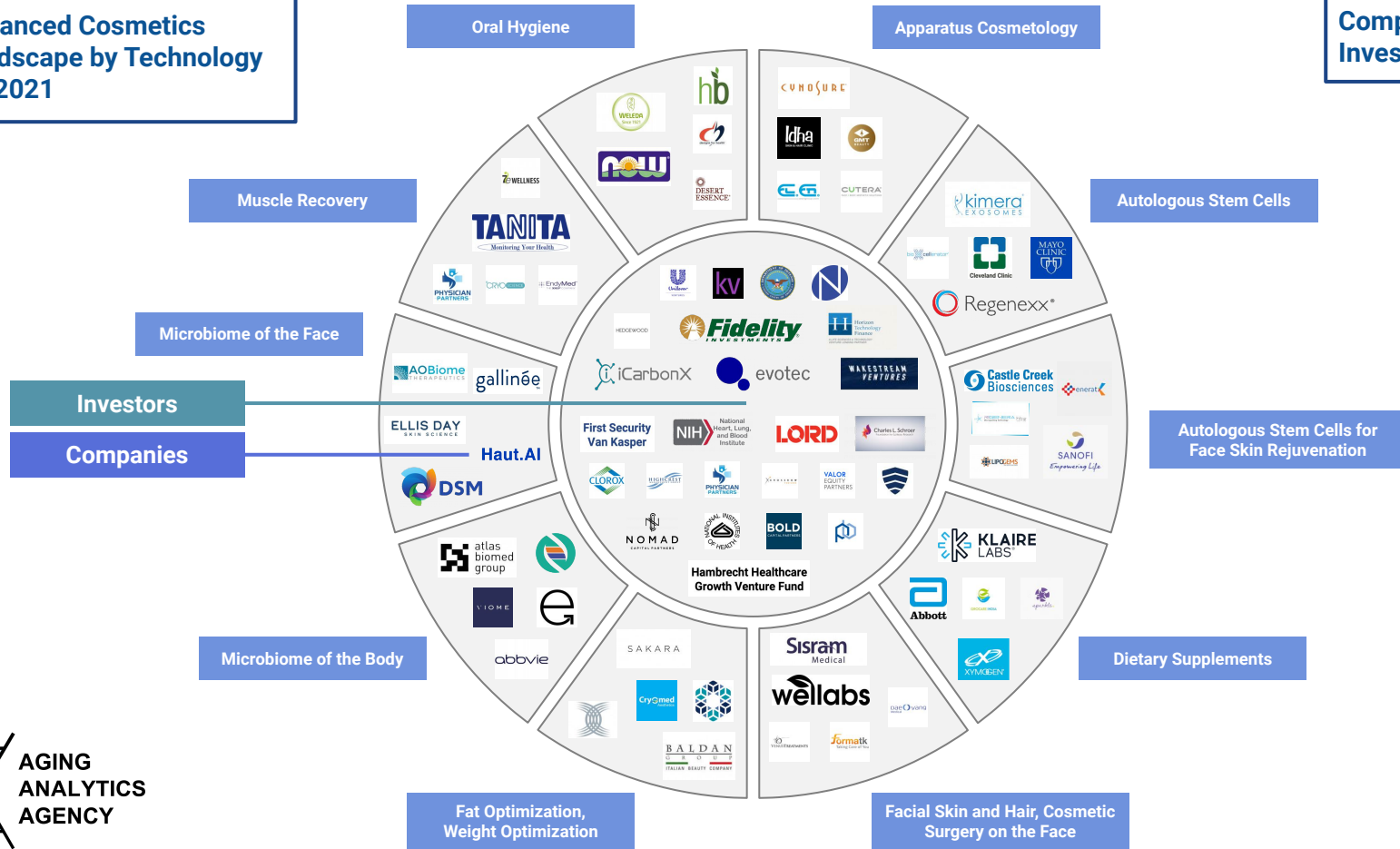
AI in Cosmetology

Peptides in Cosmetology

Intimate Cosmetology

**Advanced Cosmetics
Landscape by Technology
Q2 2021**

**Companies – 50
Investors – 25**



List of the Companies*

1	7ewellness
2	Abbott
3	Abbvie
4	AOBiome
5	Atlas Biomed Group
6	Baldan Group
7	BIOMES
8	BioXcellerator
9	Castle Creek Biosciences
10	Cleveland Clinic
11	Cryomed
12	CryoScience
13	Cutera

14	Cynosure
15	Daeyang Medical
16	Desert Essence
17	Designs for Health
18	DSM
19	El.En. Spa
20	Ellis Day Skin Science
21	Elsavie
22	Endymed
23	FormaTK
24	Gallinee
25	Generatx
26	GMT Beauty

*in alphabetical order as for 2021

List of the Companies

27	Grocare India
28	Haut.AI
29	Hyperbiotics
30	Idha Skin Clinic
31	Kimera Labs
32	Klaire Labs
33	Life Extensions
34	Lipogems
35	Mayo Clinic
36	Mego Afek
37	NOW Foods
38	Physiomed

39	Regenexx
40	Rigenera HBW
41	Sakara
42	Sanofi
43	Sisram Medical
44	Sparkle
45	Tanita
46	VenusTreatments
47	Viome
48	Weleda
49	Wellabs
50	XYMOGEN

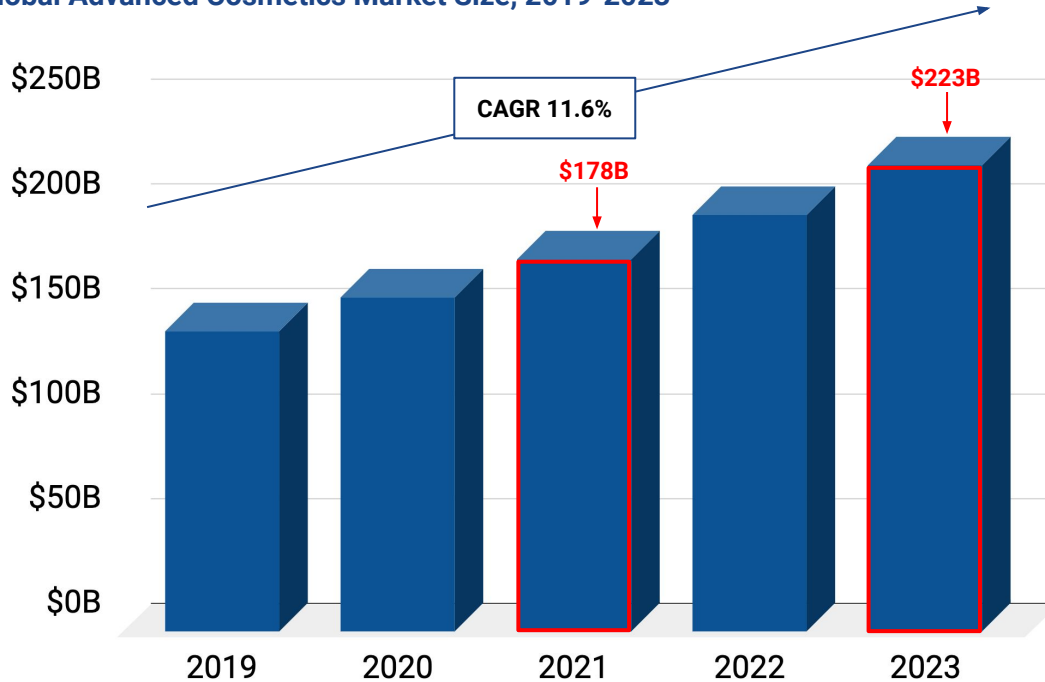
Advanced Cosmetics Market Overview

Q2 2021



Advanced Cosmetics Market at a Glance

Global Advanced Cosmetics Market Size, 2019-2023



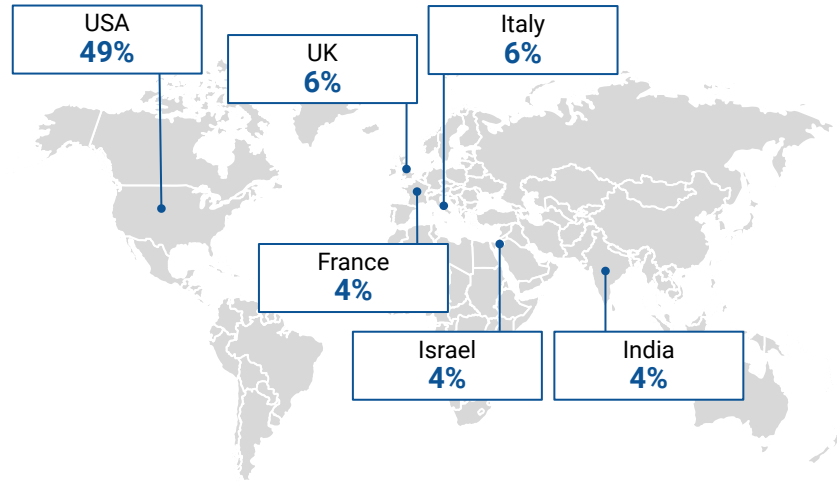
Source: Aging Analytics Agency analysis; Media overview

The global Advanced Cosmetics market size accounted for **\$178 B in 2020** and is projected to grow at a **CAGR of 11.6%** from 2019 till **2023 to reach \$223B**. Despite increasing interest in recent years, the industry remains underestimated and has enormous growth potential.

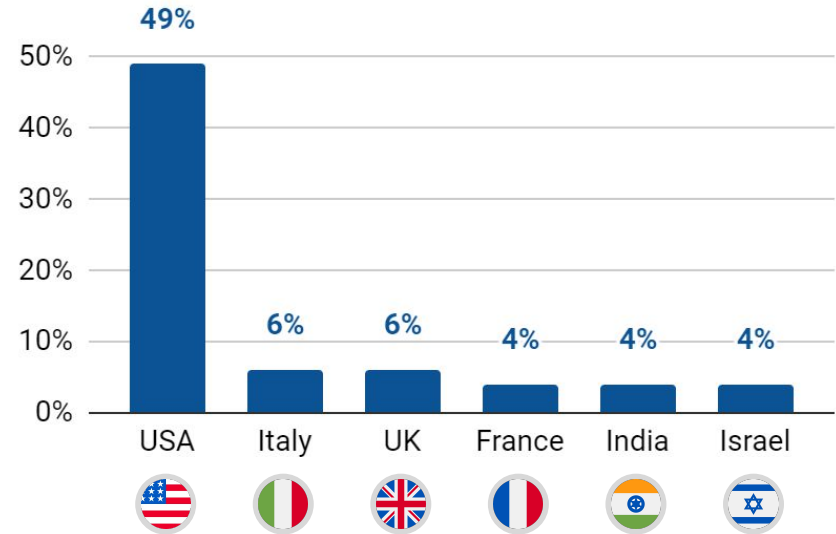
Such **factors** as increasing consumer perception regarding appearance, growing preference towards natural and organic products, rising disposable income in emerging economies, and the availability of scientifically advanced products are forecasted to drive the growth of the Advanced Cosmetics market.

Advanced Cosmetics Market at a Glance

Distribution of Advanced Cosmetics' Companies by Country, %



Countries with the Largest Number of Companies, %

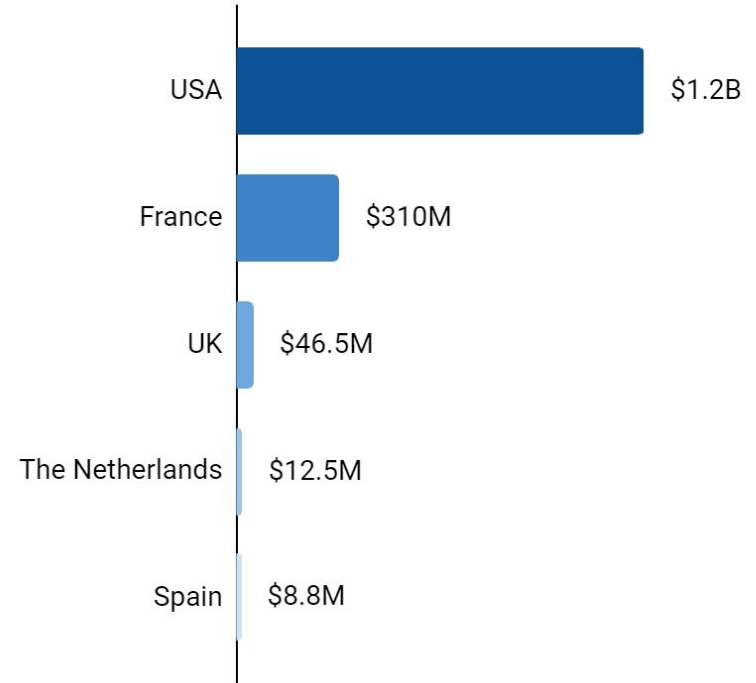
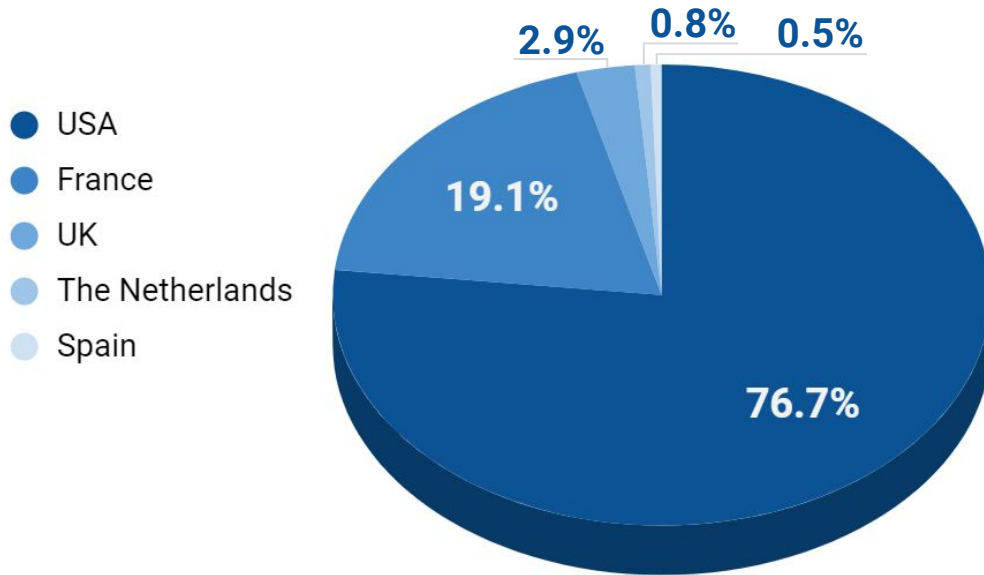


The Northern American region, mainly the USA, is still firmly in the lead in terms of the number of Advanced Cosmetics companies. The number of companies located in the USA is significantly more than in the other countries and accounted for **49%** of the whole range of analyzed companies. Nevertheless, **the European region also looks relatively promising**, as the number of companies located there amounted to **16%** of the total. The UK and Italy are the leading countries in the region – 6% of all analyzed companies each.

Source: Aging Analytics Agency analysis

Advanced Cosmetics Market at a Glance

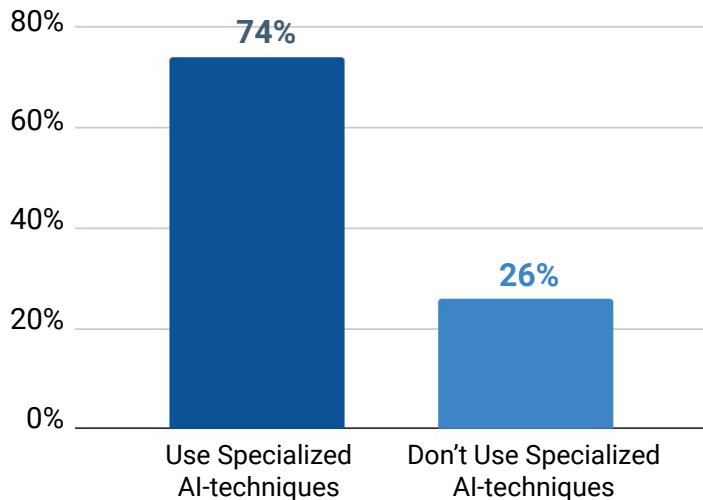
The US is a leader in the number of Advanced Cosmetics companies. Consequently, the total amount of the investments they receive is the largest among all analyzed countries and equals **\$1.2B**. France and UK-based companies follow them with the total amount of investments of **\$310M** and **\$46.5M**, respectively.



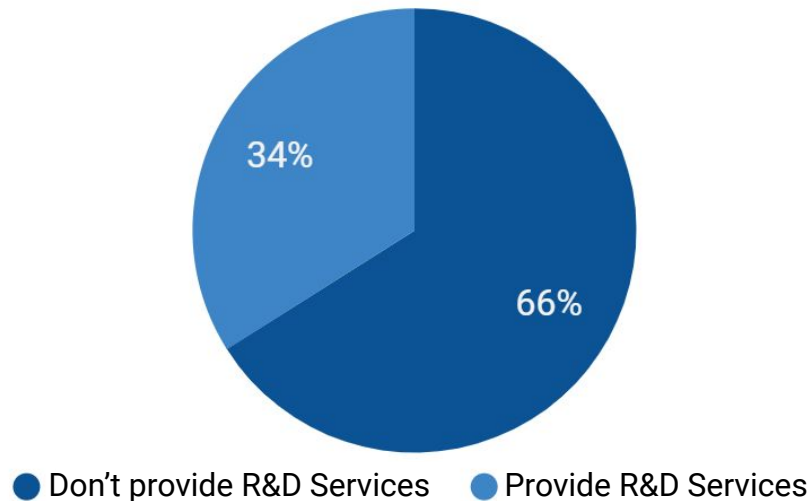
Source: Aging Analytics Agency analysis

Advanced Cosmetics Market at a Glance

Companies by AI-techniques Usage, %



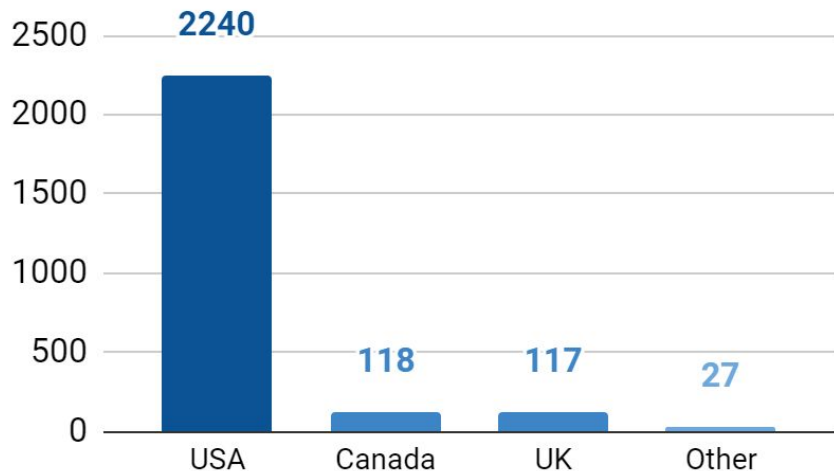
Companies by Providing R&D Services, %



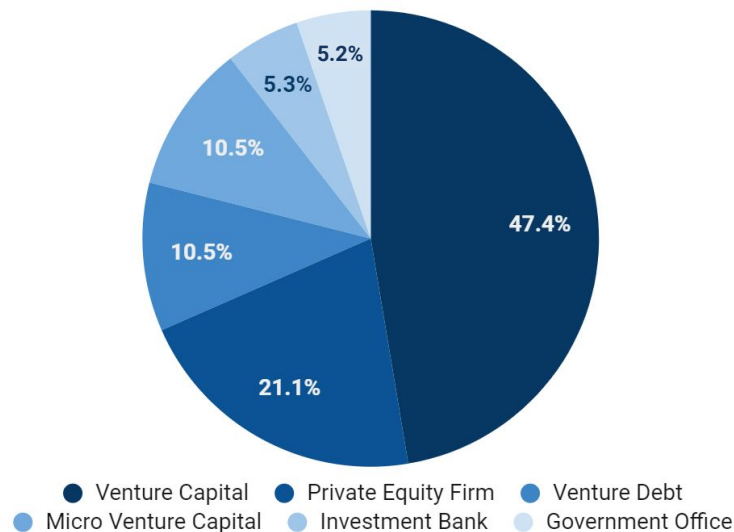
34% of the analyzed companies provide outsourcing **R&D Services** or develop R&D Services as their product. In addition, **74%** of the companies mention the usage of the **AI-techniques** in developing their products or technological solutions. There is a trend towards an increasing level of using AI in the Advanced Cosmetics market compared to R&D Services.

Advanced Cosmetics Market at a Glance

Countries with the Largest Number of Investments



Main Type of Investors, %



Investors made **the vast majority of the investments** in Advanced Cosmetics' companies **from the US in the amount of 2240**, which is **89.5%** of the total number of investments. **Canada and UK** follow the USA with a **total number of investments of 118 and 117, respectively**. The two main types of investors are **Venture Capital and Private Equity Firm**, which accounted for **47.4% and 21.1%** of the **total investors**.

Source: Aging Analytics Agency analysis

Longevity and Advanced Cosmetics



Longevity Industry

There are more than **1 billion** people over **60 years old** in the world. They represent not only a significant share of the global purchasing power but also hold the largest amount of financial assets compared to other age groups.

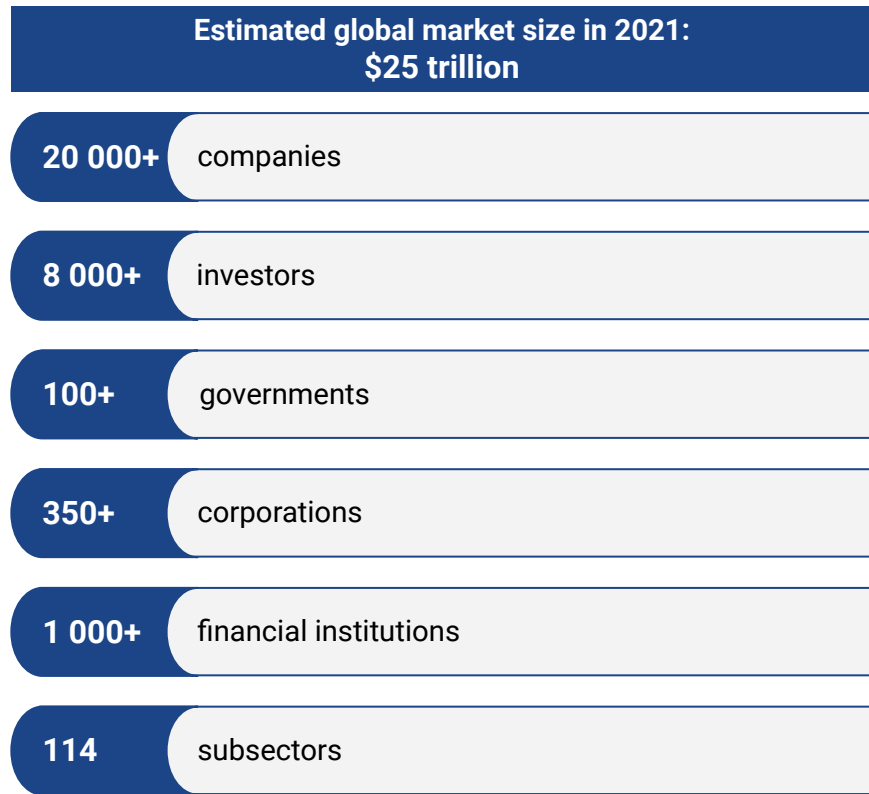
The **Longevity Industry** is a combination of aging, advanced preventing precision biomedicine, AgeTech, relevant parts of national healthcare budgets, and the global financial industry related to such sub-industries.

Longevity is now regularly embraced as a **major topic** of interest for panel discussions and entire conference series by top-tier finance and business media brands, including The Economist, Financial Times, and Bloomberg.

There are two opposed **MegaTrends**: population aging and advanced biomedicine. The overall market size thus can exceed **\$25 trillion**. There are at least 350 publicly traded corporations that can be considered as related to the Longevity industry. Longevity Biomedicine, FinTech, and AgeTech industries include 20000+ companies, 8000+ investors, 14 sectors, and 114 subsectors.

Considering the aspect of anti-aging, we can observe a **clear link** between the **Longevity** and **Advanced Cosmetics** industries. As the market share of the older age group is constantly growing, the Advanced Cosmetics Market proposes corresponding solutions.

Source: Longevity Investment Digest



Longevity: Mechanisms of Anti-aging Cosmetics

Moisturizing is essential for all skin types. Indoor heaters, cold air, and prolonged sun exposure contribute to skin dehydration.

Moisturizing

Removing of
Free Radicals

Free radicals are atoms with an unpaired valence electron. Because of this, free radicals are known as 'electron thieves,' i. e. they take electrons from other molecules in the body. Although reactive oxygen species and antioxidants are produced continuously in the body, there is evidence to consider oxidation of essential macromolecules as one of the causes of aging. Also, **taking antioxidants can help remove the free radical intermediates and prevent the propagation reaction of free radicals.**

Skin wound healing process is a complex process that artificially can be divided into three to five stages: hemostasis and blood clotting, inflammation, proliferation and repair, and remodeling. Anti-aging cosmetics, as a rule, act by influencing the last two stages of wound healing.

Cell Repair and
Tissue
Regeneration

UV Absorption

Exposure to UV rays is one of the most aggressive environmental factors that can cause melanoma, immune system damage, photoaging, age spots and wrinkles, actinic keratosis, solar elastosis, cataracts, and other eye problems. To avoid premature aging of the skin, experts recommend avoiding **sun exposure when possible or use the sunscreen marked as "broad-spectrum" with an SPF of at least 30 for a day outdoors.** Obviously, such sunscreen **doesn't completely protect our skin or eyes,** however, it can significantly **reduce the risk of skin damage and skin cancer.**

Skin Care and Aging

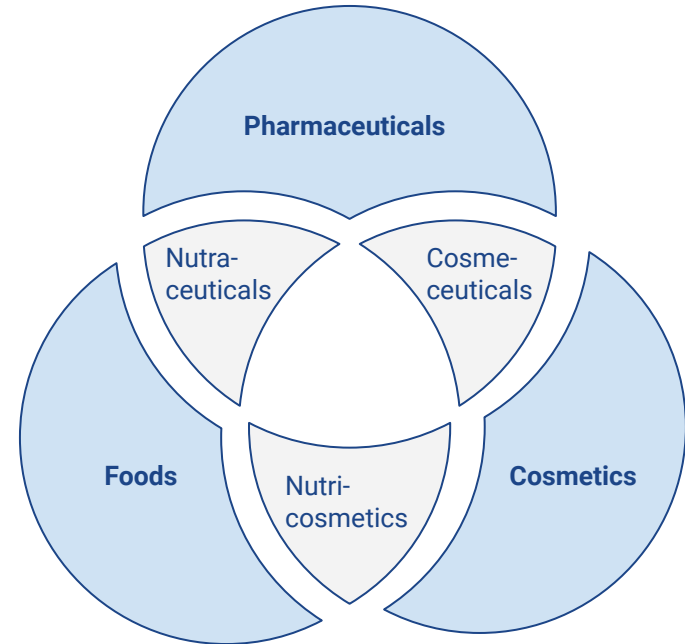
Skin aging is the most visible sign of aging. When a lot of wrinkles and spots on the skin are visible, there is no need to ask a person to do something to roughly determine their age. Nevertheless, due to differences in genotype, physical activity, and skincare, not all people at the same age look the same.

In general, skin care procedures can be divided into three major parts:

Taking or applying beneficial ingredients on the skin

Removing harmful or excess substances
(that accumulate in the body over time)

Other skin care procedures



Although human skin is relatively resistant and regenerates quickly, like all other organs and tissues, **it is affected by destructive processes associated with aging.** As time goes by skin becomes more dry, wrinkled, pigmented. And what is somewhat unexpected is that according to statistics, most people over the age of 65 have at least one skin-related condition.

Autologous Stem Cells



Stem Cells: Introduction

In recent years dermatology and aesthetic medicine have adopted multiple cellular technologies from regenerative medicine. **The Application of stem cells allows to repair and replace cells in tissues and organs since the potential of stem cells is to stimulate the recruitment of endogenous stem cells and promote their differentiation to cells that are needed.** Moreover, stem cells have antioxidant capabilities that **likely mitigate inflammation and wound healing.** **Restoration of skin** can be reached by cellular intradermal rejuvenation with **autologous stem cells (ASCs)**. This is technically feasible because discrete populations of ASCs are found throughout their lifetime in most human body tissues. Thus, a patient's own tissue and cells can be obtained from different tissues, processed outside the body, and reintroduced back into the patient.

Stem Cells

Allogenic

Stem cells from the body of the same species

Xenogenic

Stem cells from the body of the different species

Autologous

Stem cells from organism's own body

Totipotent

Cells are capable of **differentiating into all types of cells** in the human body and renew itself. For instance, the zygote (fertilized egg) or embryonic cells.

Pluripotent

Cells that possess the ability to self-renew by **dividing and to develop into the three primary germ cell layers** of the early embryo and therefore into all cells of the adult body.

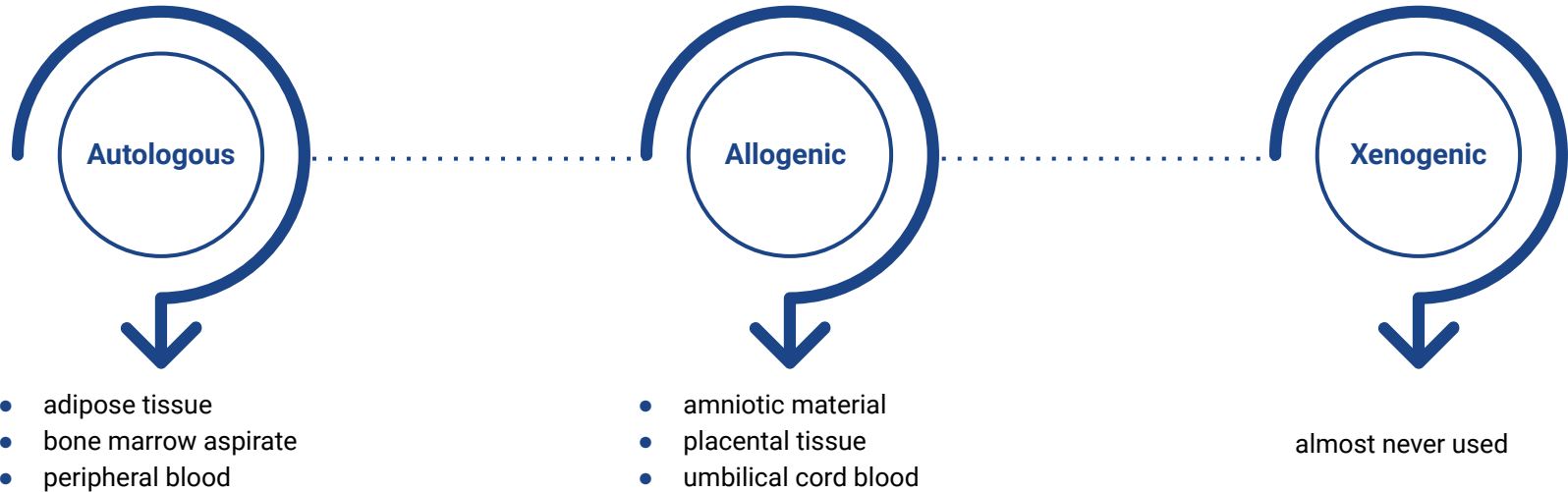
Multipotent mature mesenchymal cells (MSCs)

MSCs can self-renew by dividing and **transforming into multiple tissues**, including bone, cartilage, muscle and fat cells, and connective tissue. MSCs are preferred for use in clinical practice given the high availability and relative lack of ethical concerns.

In anti-aging therapy among different types of **MSCs adipose-derived stem cells (ADSCs) are most popular.** This is due in large part to the fact that ADSCs can be isolated from adipose tissue in large quantities using a standard wet liposuction procedure under local anesthesia, with minimal discomfort and morbidity of the patient, and without the need for expansion in culture, in contrast with bone marrow MSCs (BM-MSCs).

Sources: Aging Analytics Agency analysis; Aesthetic Surgery Journal

Stem Cells: Technologies



Most US businesses engaging in direct-to-consumer marketing of cellular products **use autologous sources of stem cells**, although allogeneic and xenogeneic products are also advertised. Specific sources of ASCs encompass adipose tissue, bone marrow aspirate and peripheral blood. Smaller parts of companies promote a “combination” of autologous stem cells obtained from fat and bone marrow. **Only two companies market autologous “mesenchymal stem cell treatments”** without identifying the origin of these cells. The remaining businesses advertise allogeneic stem cells reportedly sourced from amniotic material, placental tissue, or umbilical cord blood. Herein, marketing claims about autologous adipose-derived stem cells and autologous bone marrow-derived stem cells are prevalent. Moreover, many businesses offer their clients a choice between ASCs obtained from fat or bone marrow or recommend one source of cells for particular kinds of treatments and another source for different health problems.

Sources: Aging Analytics Agency analysis; Direct-to-consumer marketing of stem cell interventions by Canadian businesses

Stem Cells: Regulation

FDA Regulation Statements:

1 Minimally Manipulated

Minimal manipulation is considered as processing that **does not alter the relevant biological characteristics** of cells or tissues.

2 Homologous Use Only

Homologous use means the repair, reconstruction, replacement, or supplementation of a recipient's cells or tissues with ASCs that **perform the same basic function or functions in the recipient as in the donor**. Human cells or tissue products used in a **'nonhomologous' manner are regulated as drugs, biologics, or medical devices**, and accordingly, they require pre-marketing approval from the FDA.

3 Approved Reagents Use Only

The manufacture of ASCs must not be provided with other reagents or, except for **water, crystalloids, or sterilizing**, preserving or storage agents since the addition of water crystalloids or the sterilizing agent does not raise new clinical safety concerns concerning ASCs.

Explicit regulation rules of the clinical use of stem cell-based interventions are absent. Many advertising "stem cell treatments" lack official approval for products and require pre-marketing authorization.

The potential side effects of stem cell treatment are still unclear. It may include rejection, hyperimmune response and neoplasm. Cross-contamination with other stem cell lines and uncontrolled differentiation has been proposed to be causing factors. Apart from that, the fundamental question is how the donor's age affects the regenerative potential of ASCs. Human ASCs that have been cultured *in vitro* for long periods have been found to produce tumors in immunodeficient mice.

Given that stem cell properties have not yet been fully explored, **any stem cell therapy should be approved** by national or regional regulatory authorities. Examples include **the European Medicines Agency (EMA), the US Food and Drug Administration (FDA), or Japan's Pharmaceuticals and Medical Devices Agency (PMDA)**.

Almost all stem cell treatments remain in the experimental stages. For that reason, there are three options: **participating in a clinical trial, stem cell tourism or taking procedures in a limited number of exclusive clinics** with appropriate equipment and service.

Stem Cells in the Advanced Cosmetics

The evolution of biotechnology has led to the development of new cosmetic materials using human stem cells.

By now, the use of stem cells in cosmetic medicine continues to expand. It was started with **FDA approval of laViv (azficel-T), first-in-class personalized cell therapy for eliminating fine wrinkles or nasolabial folds around the nose and mouth.** Each laViv treatment involves harvesting a patient's own fibroblasts from behind the ear, culturing them for 90 days, and then reinjecting expanded cells into the dermis during a series of treatments. The company's safety data during clinical trials were sufficient to warrant approval. **The use of fibroblasts has been explained in detail in the next chapter.**

Now, it has become evident that the major effects of tissue repair are not entirely based on direct stem cell implantation, but **rather by the secretion of soluble (paracrine) factors from the stem cells themselves.**

This method **does not rely on direct stem cell transplantation** and offers the same efficacy as traditional stem cell transplantation therapies, with **higher safety and minimized risk profiles for the patient.**

Sources: Aging Analytics Agency analysis; Stem Cell Therapy

Conditions of Usage in Clinical Trials

The role of ASCs in volume retention of fat grafts

Improving fat graft retention in the breast following breast cancer resection

Reducing wrinkles when co-delivered with fat grafts

Skin ulcers

Diabetic wounds

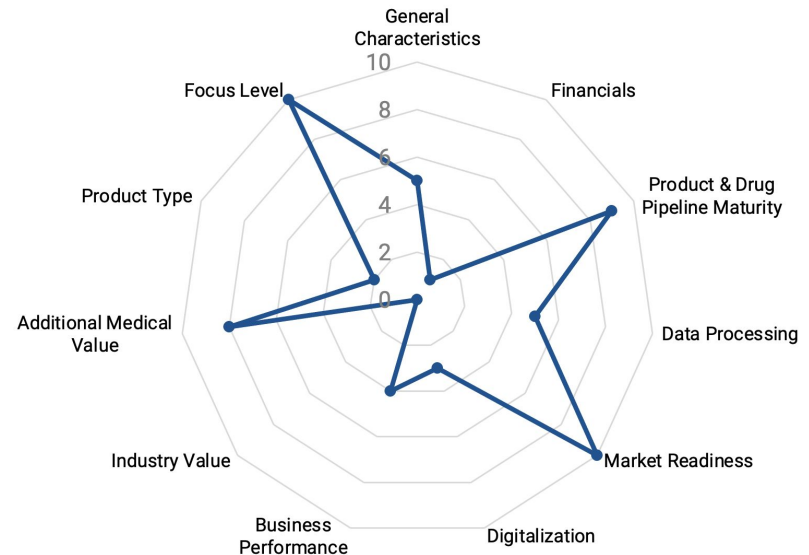
Improving skin quality of irradiated breasts

Description

Mayo Clinic is the first and largest integrated medical group practice in the world. Doctors from every medical specialty work together to care for patients, joined by standard systems and a philosophy of "the patient's needs come first." More than 3,800 physicians and scientists and 50,900 allied health staff work at Mayo Clinic, which has sites in Rochester, Minn., Jacksonville, Fla., and Scottsdale/Phoenix, Ariz. Mayo Clinic also serves over 70 communities through Mayo Clinic Health System with locations in MN, IA, and WI. Collectively, these locations care for more than 1 million people each year. Mayo Clinic provides medical care, research, and education services. It offers medical care services in various specialties, including diabetes and endocrinology, gastroenterology, gynecology, cancer, neurology and neurosurgery, orthopedics, pulmonology, rheumatology, nephrology, urology, and cardiology and heart surgery.

Website:	https://www.mayoclinic.org
Technology:	Autologous Stem Cells
Number of Employees:	10,001+
Founded in:	1919
Headquarter:	Rochester, Minnesota, United States
Founders:	Augustus Stinchfield, Charles Horace Mayo, Christopher Graham, Donald Balfou, Henry Stanley Plummer, Melvin Millet, William James Mayo
Total Funding Amount (\$):	386 100 000
Investors:	National Institutes of Health, U.S. Department of Defense, Jay Alix

Source: Company's website

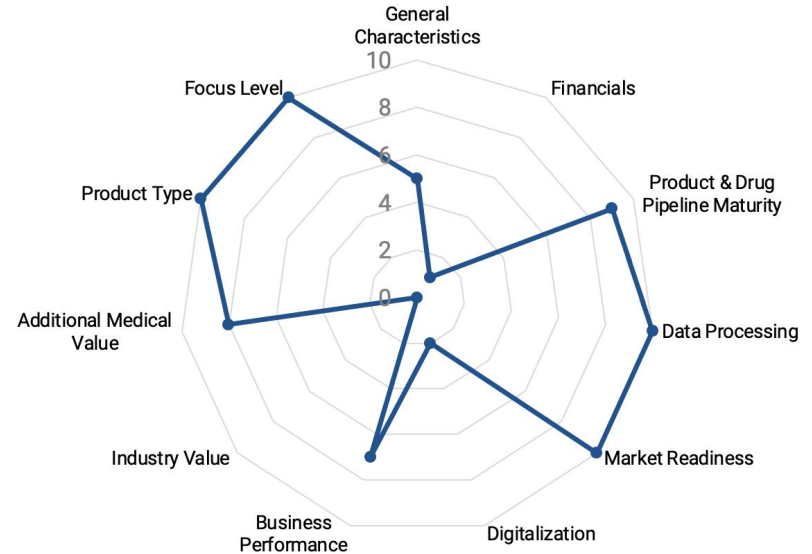


Description

Cleveland Clinic was at the forefront of modern medicine when its founders opened it as a multi-specialty group practice in 1921. In its first century, Cleveland Clinic has introduced many medical firsts, opened facilities worldwide, and is proud to be ranked among the top hospitals in the country. Now, 100 years later, the founders' vision remains Cleveland Clinic's mission: caring for life, researching for health, and educating those who serve. Cleveland Clinic health system includes eight regional hospitals, 16 family health centers, a children's hospital for rehabilitation, and one affiliate hospital. Cleveland Clinic is accredited by The Joint Commission, the nation's largest accreditor of healthcare organizations.

Website:	http://my.clevelandclinic.org
Technology:	Autologous Stem Cells
Number of Employees:	1001-5000
Founded in:	1921
Headquarter:	Cleveland, Ohio, United States
Founders:	Frank E. Bunts, George Washington Crile, John Phillips, William Edgar Lower
Total Funding Amount (\$):	327 600 000
Investors:	National Institutes of Health, U.S. Department of Defense, Patient-Centered Outcomes Research Institute, The Clorox Company, National Heart, Lung and Blood Institute

Source: Company's website



Description

Regenexx was the first company that used stem cells to treat orthopedic injuries. Regenexx has published roughly half of all research worldwide on the use of bone marrow concentrate for orthopedic conditions and has created the field of interventional orthopedic protocols, the use of the body's natural healing abilities to repair orthopedic injuries non-surgically. The approach is rooted in research and is constantly being refined and developed as we continue to lead the way in finding better methods for harnessing your body's healing agents to repair damaged tissue. The proprietary protocol leads to arguably the world's most advanced platform for in-office interventional orthopedics. With over 6 million covered lives across the country, Regenexx uses our advanced regenerative technologies to help self-funded employers save up to 80% of their orthopedic healthcare costs by providing an effective, low-cost alternative to roughly 70% of orthopedic surgeries.

Website: <https://www.regenexx.com/>

Technology: Autologous Stem Cells

Number of Employees: 51-200

Founded in: 2005

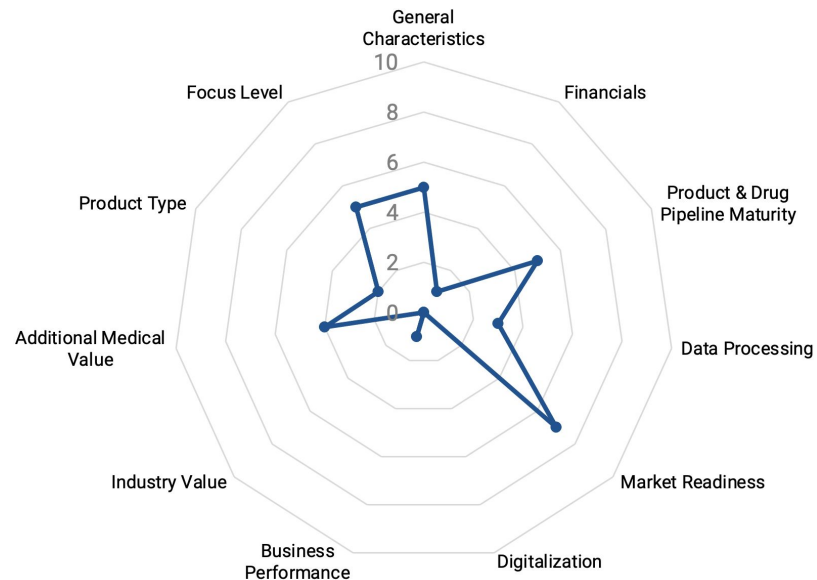
Headquarter: Broomfield, Colorado, United States

Founders: Chris Centeno

Total Funding Amount (\$): N/A

Investors: N/A

Source: Company's website

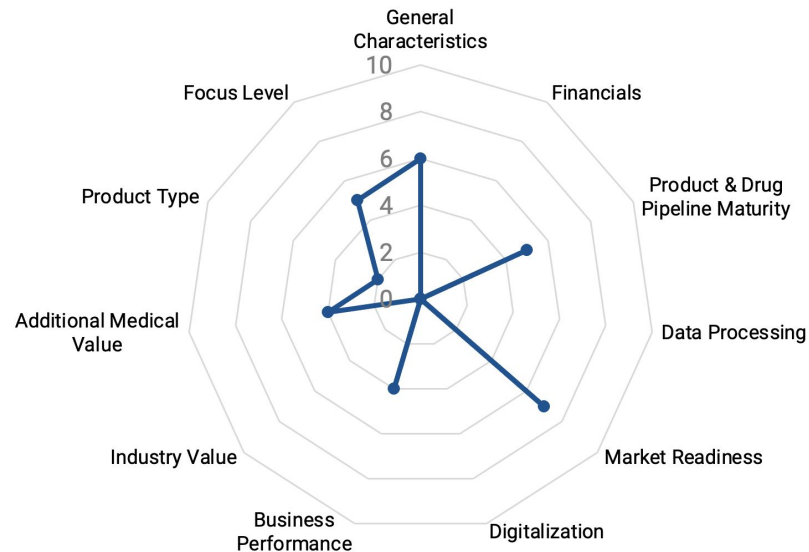


Description

Kimera Labs is a biotechnology lab that produces perinatal mesenchymal stem cell-derived exosome products for scientific research. The fundamental purpose of Kimera Labs is to advance the exosome industry through research and development, clinical investigation, and support of health care providers. Kimera Labs uses a proprietary isolation and purification process to produce MSC exosome products from pure, isolated mesenchymal stem cell cultures. Isolation of MSC exosomes and precise exosome analysis provides a degree of exosome purity and consistency that could enable a broad scope of clinical investigation. Production of exosomes from isolated MSC cultures derived from a master cell line reduces the risk of pathogen or particulate contamination associated with exosomes produced by direct tissue processing.

Website:	https://kimeralabs.com/
Technology:	Autologous Stem Cells
Number of Employees:	11-50
Founded in:	2012
Headquarter:	Miramar Beach, Florida, United States
Founders:	Dunkan Ross
Total Funding Amount (\$):	N/A
Investors:	N/A

Source: Company's website



Description

BioXcellerator is a global leader in stem cell therapy and research – is dedicated to alleviating pain & suffering, giving new hope to those who suffer from autoimmune and degenerative diseases, and improving people’s health, immunity, longevity, and overall quality of life. BioXcellerator team of more than 50 passionate and dedicated people, including leading scientists, physicians, and researchers, work each day to develop scientific breakthroughs to transform the quality of people’s lives through advanced stem cell therapies. The company’s advanced therapies using “Golden Cells” have demonstrated remarkable results treating everything ranging from sports & orthopedic injuries, anti-aging & cosmetic treatments to life-threatening and debilitating diseases such as Alzheimer’s disease, Diabetes, and Leukemia.

Website: <https://www.bioxcellerator.com>

Technology: Autologous Stem Cells

Number of Employees: 11-50

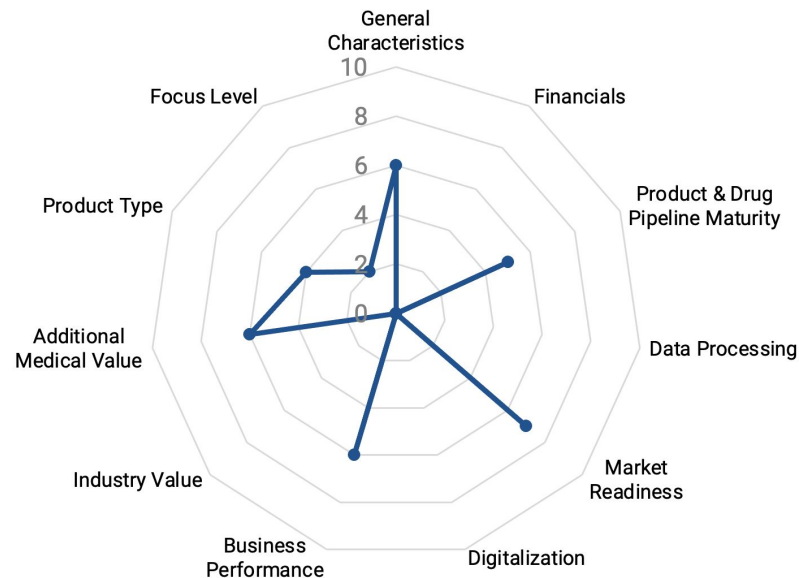
Founded in: 2015

Headquarter: Phoenix, Arizona, United States

Founders: Eric Stoffers

Total Funding Amount (\$): N/A

Investors: N/A



Source: Company’s website

Autologous Stem Cells for Face Skin Rejuvenation



Autologous Stem Cells for Face Skin Rejuvenation: Fibroblasts

Mesotherapy (intra dermal injections) of specialized cells of the dermis - fibroblasts is one of the most progressive methods in the fight against skin aging. It is the only one of its kind that allows you to fight both the external manifestations of skin aging and the very causes of aging. All other cosmetic methods only stimulate the fibroblasts present in the skin, the number of which decreases significantly with age.

The use of one's own (autologous) fibroblasts to correct age-related and pathological skin changes **is permitted in the USA, Great Britain, Switzerland, Russia, the Bahamas** and in other countries.

The largest organ in the human body is the skin.

As in all connective tissues, such as joints, cartilage, and ligaments, the most important cells are **fibroblasts**. The active work of fibroblasts contributes to the maintenance of youth and external beauty; therefore, their name is the "cells of youth."

Thanks to the advances in biotechnology over the past 20 years, **it has become possible to influence the cause of natural skin aging directly**. This was achieved by enriching the skin with its young fibroblasts, which are the builders of the extracellular matrix.

With age, the number of fibroblasts in the skin decreases (on average by 35%) and their biosynthetic potencies also decrease. Accordingly, the violation of the physiological balance in this cell population leads to significant changes in the skin's micro and macrostructure. Transplantation of the same autologous fibroblasts of the patient's skin, grown in special laboratory conditions, makes it possible to increase the number of functionally active cells in those areas of the human skin that require correction.

Fibroblasts Functions:

Synthesize collagen, elastin, hyaluronic acid and other components of the extracellular matrix

Participate in the formation of blood vessels

Enhance the processes of cell growth

Participate in the formation of blood vessels

Heal damaged skin areas

Benefits of Skin Rejuvenation with Autologous Fibroblasts

- 1 Safe, effective and minimally invasive technique
- 2 One-time skin biopsy
- 3 Possibility of re-use of fibroblasts without further biopsies
- 4 Preservation of autologous fibroblasts for an unlimited time at ultra-low temperatures
- 5 Possibility of restoring fibroblasts from a frozen state at any time at the request of the client
- 6 Absence of allergic reactions after the use of fibroblasts
- 7 The minimum number of procedures (3-5) required to achieve a positive result
- 8 Preservation of the anti-aging effect for several years without a repeated series of procedures
- 9 The clinical use of fibroblasts has been going on for over forty years with safety and the absence of side effects

Consider the use of **autologous and allogeneic fibroblasts** to correct age-related skin changes. Despite the fact that both of these methods **are related to regenerative medicine**, they are based on different biological mechanisms. When using autofibroblasts, the transplanted cells are integrated into the dermis, where they, having replenished the population of resident fibroblasts, fully function, producing and renewing the extracellular matrix components.

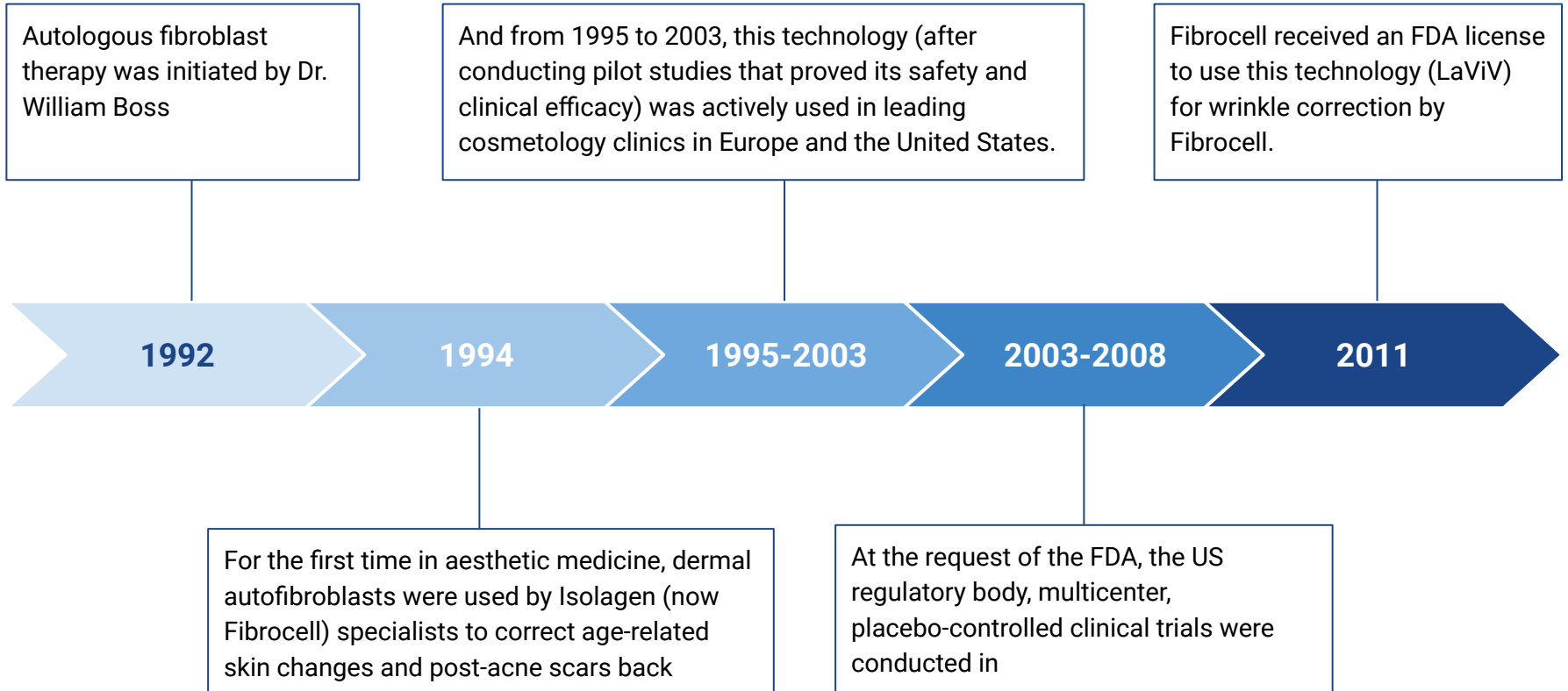
The mechanism of action of allogeneic fibroblasts is based on the induction of the functional activity of resident cells of the dermis. Moreover, since the cells are foreign, this effect cannot be long-term.

The **transplanted autologous dermal fibroblasts exhibit biosynthetic activity** for at least a year. All this time, there is a synthesis of new collagen, elastin, and other components of the extracellular matrix of the dermis. Considering that the period of complete disintegration of, for example, collagen in human skin is 30 years, one can expect long-term clinical effects from the introduction of fibroblasts.

To date, hundreds of thousands of people have already been treated with fibroblasts. This therapy has established itself as one of the most promising technologies in the treatment, restoration, and return of the lost skin's functions and connective tissues caused by aging or mechanical damage and diseases.

Sources: Aging Analytics Agency analysis; Fibroblast heterogeneity: implications for human disease

Autologous Fibroblasts in Cosmetology: Timeline



Autologous Fibroblasts in Cosmetology: Technology

Fibroblasts are isolated from a small (3-5 mm) skin fragment taken from a **patient behind the ear or in the forearm** under local anesthesia.

The cell material is injected using a mesotherapeutic technique: **intradermally**, by tunneling, using special needles (30G, 13 mm), which allows the pool of resident fibroblasts to be replenished with functionally active cells and evenly, with an adequate density over the entire area of the skin requiring correction.

Isolation

Freezing/
Lab
Culturing

Injection

Result

The obtained cells **can be stored in liquid nitrogen in a cryobank for an unlimited time**. The cells stored in this way can be used to produce a cell preparation throughout the patient's life. Obtaining fibroblasts from a biopsy of the skin is carried out according to the standard method.

Remodeling of the skin microstructure is observed: the content of **collagen and elastin fibers increases, the hydration and volume of the dermis increases, and hemomicrocirculation increases**. Clinical effect expressed by an **increase in the elasticity, firmness, and thickness of the skin, a decrease in the depth and number of wrinkles, an improvement in color skin**, changes gradually increasing (for at least 12 months) and long-lasting.

Sources: Aging Analytics Agency analysis; Fibroblast heterogeneity: implications for human disease

Autologous Fibroblasts in Cosmetology: Results

The Main Results:

Skin aging slows down

The color of the skin improves

Deep wrinkles are smoothed and small ones are disappeared

Increased firmness and elasticity of the connector noisy skin tissue

A significant effect in scar correction and nasolabial folds after 7 and 12 months

1

In the first hours after cells introduction, local effects are observed in the form of **hyperemia (local increase in blood flow) and slight edema**, which disappear **2-3 hours** after the procedure.

2

The positive effect begins to appear **6-8 hours** after the procedure which is expressed in **an increase in turgor (elasticity) and elasticity of the skin**, its blood supply. A positive effect was noted consisting in the disappearance of small wrinkles and a decrease in large wrinkles.

3

Skin improvement occurs over several months. The preservation of the positive effect **can be traced for 12 months**.

There is ample evidence of the **efficacy and safety of autologous fibroblasts therapy**. In the literature, **no cases of serious side effects have been described**. The ineffectiveness of treatment is mainly associated with old age, smoking, alcoholism, and taking immunosuppressive medications.

Sources: Aging Analytics Agency analysis; Autologous Fibroblasts Injections in Face

Autologous Fibroblasts in Cosmetology: Summary

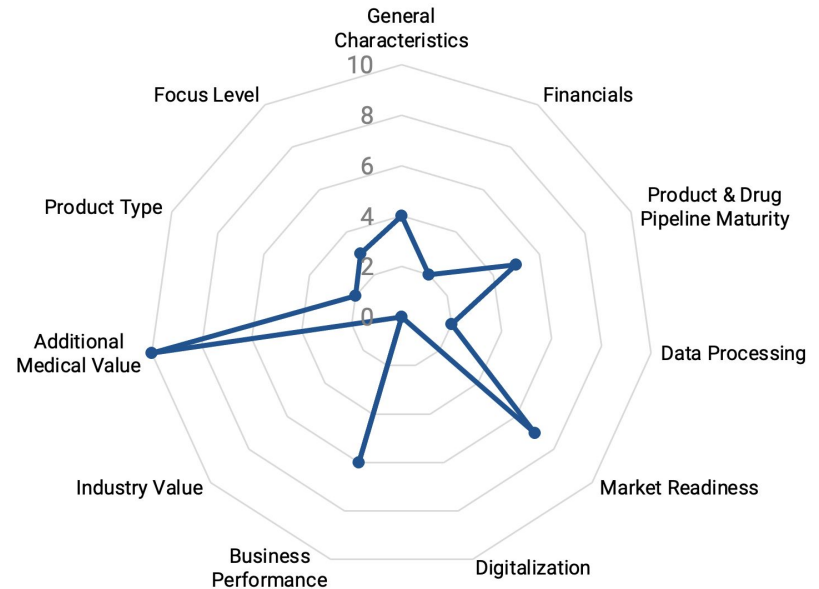
- 1 The skin regeneration technology using its fibroblasts allows you to restore the structure and functions of the dermis lost over the years due to the unique biological mechanism of the patient's own collagen-forming skin cells.
- 2 Fibroblast therapy has been used in aesthetic medicine for over ten years, and thousands of clinical observations of patients have been carried out.
- 3 This procedure is an independent, effective method of dermis remodeling and a good basis for the use of other cosmetic procedures aimed at stimulating the synthetic activity of fibroblasts which allows maintaining the patient's skin in good condition for a long time.
- 4 Unlike many other popular methods of cosmetology, this technology provides morpho-functional tissue restoration. Moreover, the advantages of using autologous cells of the patient (in comparison with allogeneic ones, despite the longer and more expensive processing) are undeniable: the risks of contamination with infectious agents and the development of immunological reactions are excluded, there is no need to address ethical issues. And of course, such a factor as the long-term clinical effect is extremely important.

Description

Castle Creek Biosciences is a privately held, clinical-stage cell and gene therapy company that focused on developing and commercializing disease-modifying therapies for patients suffering from orphan conditions where there are high unmet needs due to a lack of available treatment options. The company's approach to personalized biologics is distinctive based on our proprietary, autologous fibroblast technology platform. By extracting fibroblast cells from a patient's skin, they create localized treatments that are compatible with the unique biology of each patient and have the potential to address the underlying cause of the disease.

Website:	https://castlecreekbio.com/
Technology:	Autologous Stem Cells for Face Skin Rejuvenation
Number of Employees:	11-50
Founded in:	2015
Headquarter:	Exton, Pennsylvania, United States
Founders:	Jeff Aronin, Michael Derby
Total Funding Amount (\$):	194 800 000
Investors:	Fidelity Management and Research Company, Valor Equity Partners, Horizon Technology Finance, Paragon Biosciences

Source: Company's website

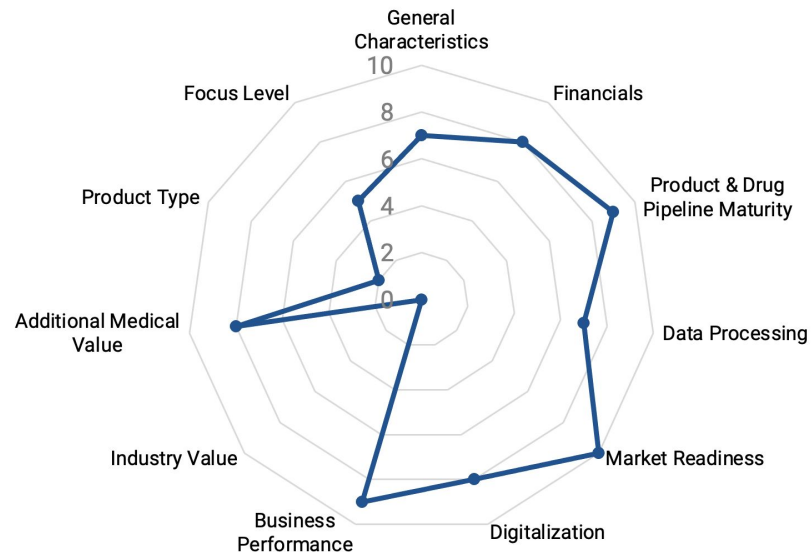


Description

Sanofi is a healthcare company engaged in the research, development, manufacturing, and marketing of innovative therapeutic solutions. It covers diabetes solutions, human vaccines, innovative drugs, consumer healthcare, emerging markets, animal health, and the new G enzyme. Its products include prescriptions and over-the-counter drugs for thrombosis, cardiovascular disease, diabetes, central nervous system disorders, oncology and internal medicine, vaccines, and other medical products. More than 110,000 people at Sanofi are dedicated to making a difference in patients' daily lives, wherever they live, and enabling them to enjoy a healthier life.

Website:	https://www.sanofi.com/
Technology:	Autologous Stem Cells for Face Skin Rejuvenation
Number of Employees:	10,001+
Founded in:	2004
Headquarter:	Paris, Ile-de-France, France
Founders:	Jean-François Dehecq, Jean René Sautier
Total Funding Amount (\$):	310 000 000
Investor:	Evotec

Source: Company's website

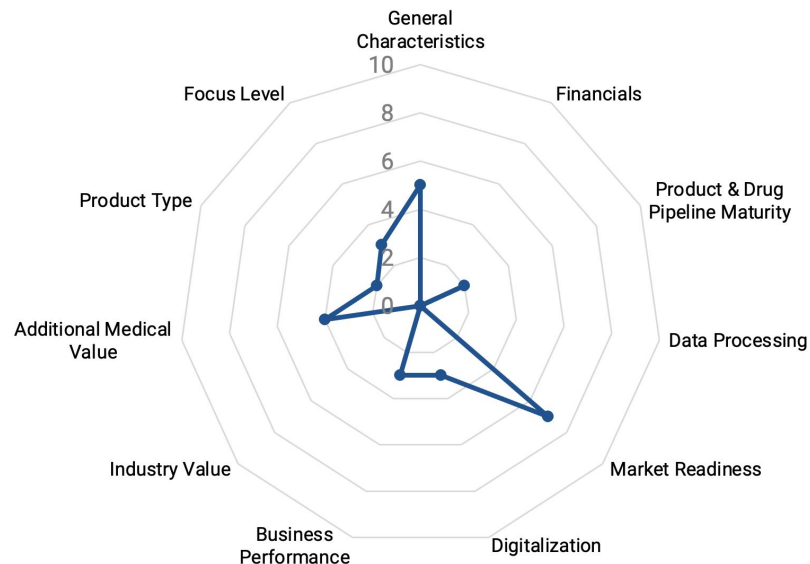


Description

Generatx is an innovative group of clinicians dedicated to optimizing patient outcomes by individualizing and tailoring treatments to meet each patient's needs. Generatx has revolutionized the medical field by introducing and applying Stem Cells to all types of therapies. To date, they have helped to enhance the lives of patients with Head injuries, Stroke, Arthritis, Parkinson's, COPD, Macular Degeneration, Dementia, Depression, Diabetes, and many other illnesses. In addition, rare disorders such as Charcot-Marie-Tooth, Neurofibromatosis, and some Autism are benefiting as well. Generatx uses stimulators with the Stem Cells to produce the highest potency per individual outcome. Before any protocols are determined, a comprehensive assessment is made to maximize results. The protocols also include an assessment of neurological, endocrine, and immunological aspects when indicated.

Website:	http://generatx.com
Technology:	Autologous Stem Cells for Face Skin Rejuvenation
Number of Employees:	11-50
Founded in:	N/A
Headquarter:	Mission Viejo, California, United States
Founders:	N/A
Total Funding Amount (\$):	N/A
Investors:	N/A

Source: Company's website

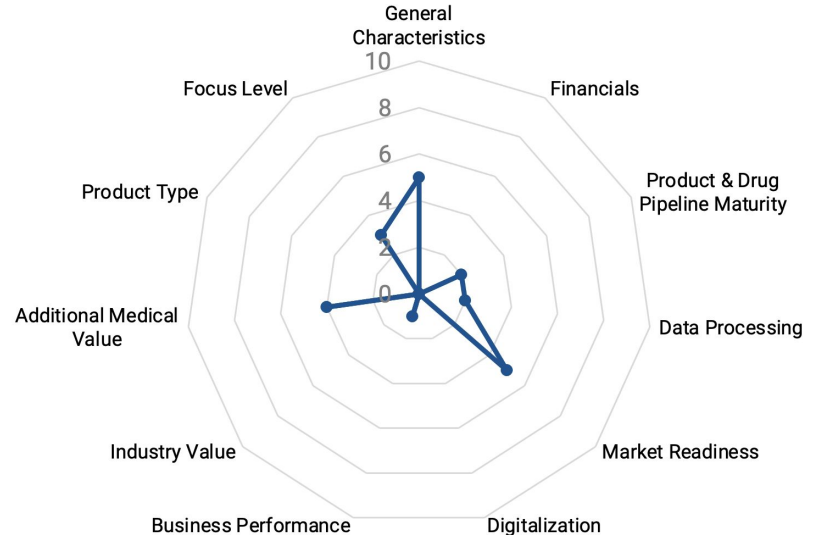


Description

Lipogems' vision is to bring responsible, effective medical technologies to physicians and patients. Lipogems strives to provide physicians and patients with fatty tissue solutions to help maintain or restore patient lifestyles and improve quality of life and recovery times. In addition, these solutions may offer another option to those who may not want or are not candidates for major invasive surgery. Lipogems has developed and patented a disposable sterile device (CE Marked Class IIa) for close-circuit, single-step processing of lipoaspirates. In the United States, the Lipogems system is 510(k) cleared and is indicated for the harvest, concentration, and transfer of autologous adipose tissue. The system meets new FDA guidelines for minimal manipulation and is intended for homologous use.

Website:	https://understandlipogems.com
Technology:	Autologous Stem Cells for Face Skin Rejuvenation
Number of Employees:	2-10
Founded in:	2010
Headquarter:	Milan, Italy
Founder:	Carlo Tremolada
Total Funding Amount (\$):	N/A
Investors:	N/A

Source: Company's website

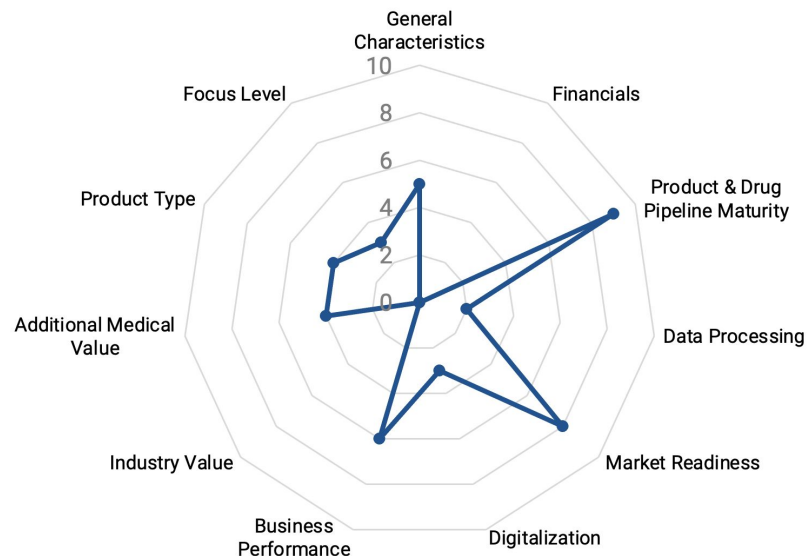


Description

Rigenera HBW is a brand created in 2013 and has established itself in over 30 countries in just a few years. Entirely made in Italy, it results from more than ten years of biotechnological research, which today is shedding new light on regenerative medicine. The technology used by Rigenera HBW allows intervention in tissues damaged by illness or trauma through a single-use device named Rigeneracons. This is a sterile device in which any kind of human tissue - taken from the patient entirely painlessly - through the method of fragmentation creates tens of thousands of micro-grafts with a dimension of approximately 80 microns.

Website:	https://rigenerahbw.com
Technology:	Autologous Stem Cells for Face Skin Rejuvenation
Number of Employees:	11-50
Founded in:	2013
Headquarter:	Candiolo, Italia
Founders:	Dr. Antonio Graziano, Dr. Riccardo D'Aquino
Total Funding Amount (\$):	N/A
Investors:	N/A

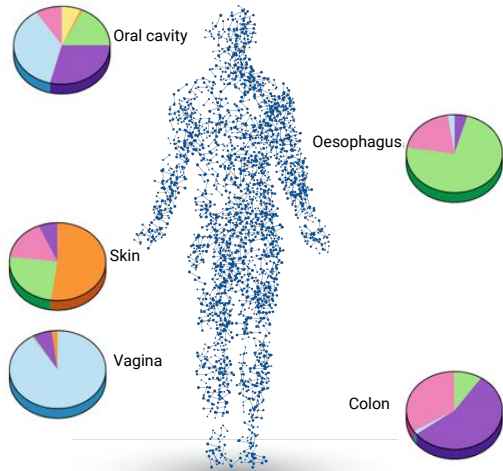
Source: Company's website



Microbiome of the Body



The Microbiome of the Body



A microbiome (microflora) is a collection of microorganisms located inside and outside the human body and forming symbiotic relationships (involving interaction between two different organisms living in close physical association) **with it**. In its turn, the microbiome is referred to as a collection of genes from the human symbiotic microbial community. In some sources, the term "microbiome" is used to denote an array of bacterial genes.

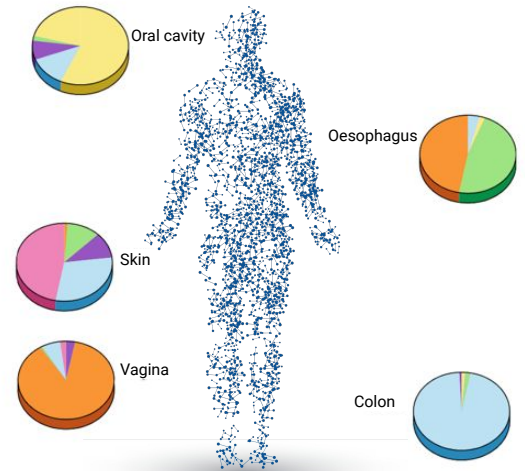
The human microbiome consists of several thousand species of fungi, eubacteria, archaea, and viruses. **The total number of eubacteria of all species is 10 times greater than the number of the human body's cells** (i.e., for each human gene, there are about 100 microbial ones). From the point of view of genetics, 99% of the human body is populated by microbes.

Our microflora is comprised of 2 kg of microorganisms. Through the nervous, endocrine, and immune systems, it, directly and indirectly, affects all processes taking place in the human body. Therefore, some sources refer to microbiota as a "microbial organ" of the human body.

Many mechanisms of interaction between macroorganisms and their microbiota have not yet been properly studied. However, **it's already clear that every system or organ in the human body is closely interconnected with the microflora.**

The human microbiome is highly personalized. Understanding the relevance of the differing microbiota between individuals is confounded by the uniqueness of an individual's microbiome. The different colors in the pie charts represent different kinds of bacteria.

Sources: Aging Analytics Agency analysis; Current understanding of the human microbiome



The Functions of the Microbiome

Functions:

Interaction Between Microflora and Pathogens



By 'competing' with pathogenic microorganisms, the microflora of the human body **succeeds in preventing infection**. The main methods for the displacement of pathogenic flora include 'competition' for nutrients and the release of specific microbial molecules inhibiting the reproduction of other species of bacteria. Furthermore, the microbiota is a prerequisite for the proper **development and functioning of the immune system at all levels** - from the initial innate defenses to the complex acquired ways of responding to allergens.

Participation in the Absorption of Nutrients



With the help of bacterial enzymes, compounds that the human body is unable to digest on its own are broken down. Bacteria also help synthesize compounds necessary for the human body, including **vitamins K and B**, absorbed from the intestines into the bloodstream and participating in metabolism.

Impact on Adaptation Mechanisms



The microbiome can actively change, "adjusting" to a change in external/internal conditions. Thus, the microflora expands **the metabolic potential of the human body beyond its genetic capabilities**.

Impact on the Effectiveness of Drugs



The intestinal microflora can directly participate in the metabolism of multiple drugs. Microbial proteins present in the blood can have an indirect effect on drug metabolism as well.

Impact on Higher Nervous Functions



Studies in rodents have shown that the nature, intensity and duration of **daily emotions depend on the microbiota composition**. Epidemiological studies suggest a link between gastrointestinal dysbiosis and various disorders of the nervous system.

Ways of Increasing Biodiversity of the Microbiome of the Human Body

Even those of us who have never been interested in the **microbiome and its effect on human health** have heard about pre- and probiotics. So, instead of focusing on how one can change their eating habits, we will get straight to the description of cleaning products, "biological disinfection," and "biome-friendly" cosmetics.

Improving the Environment

The fewer pathogens there are in the environment, the easier it is for humans to maintain the stability of their microbiome.

Cleaning animals, livestock premises, and equipment with microbial cleaners helps reduce the number of pathogenic microorganisms and avoid using expensive antibiotics and disinfectants.

Using probiotic cleaners does not harm the health of animals, keeps produce intact, and is safe for humans. This is because drugs used in animal husbandry enter the human body with food.

Using Cosmetics and Personal Hygiene Products

Studies have shown that not all cosmetics intended for daily use benefit the microbiota and the human body. In particular, using antiperspirants can alter the composition of the microbial community of the armpit skin. The increase in the number of actinomycetes results in malodor. Products containing disinfectants, such as antibacterial soap and cosmetics changing the acid-base state of the skin, may harm human health. Some components of cosmetics tend to change the composition of the microbiota. The lipids in the creams stimulate the multiplication of Cutibacterium Acnes, responsible for the appearance of a pustular rash on the skin.

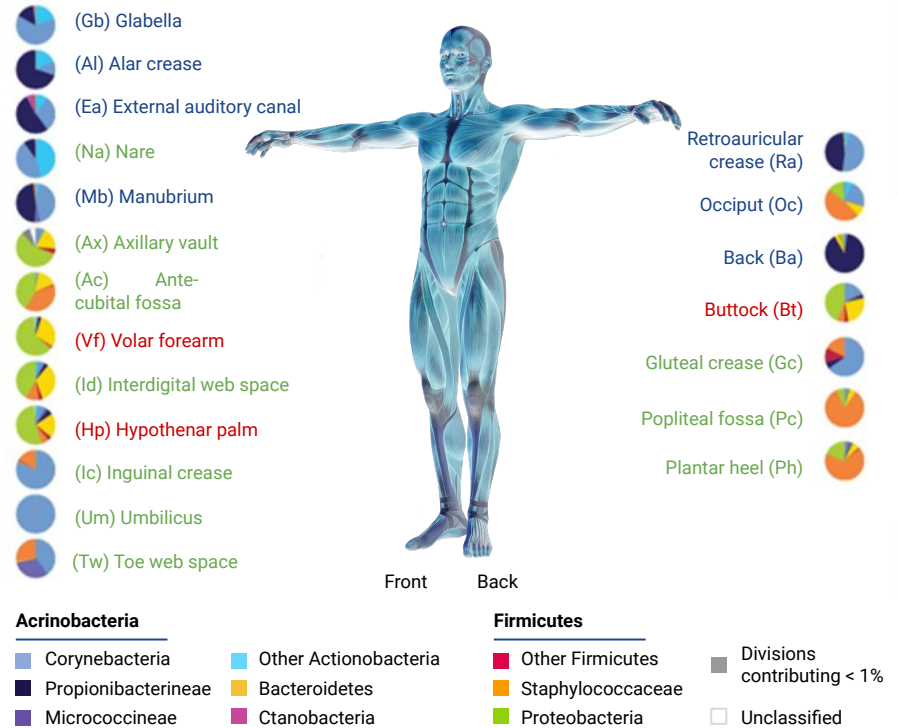
Skin Microbiome

Large numbers of various microorganisms reside on human skin. However, these are not just random bacteria, fungi, or viruses that enter the skin from the environment. **Skin microflora is a stable bacterial community that forms an additional layer of protection, which, together with keratinized epidermis and skin lubricants, protects the human body from the impact of modern environments.**

The distribution of microorganisms on the surface of the human body is uneven and is determined by the density of the sebaceous glands, hair, moisture, or dry skin. Saprophytic and epidermal staphylococci are quite common. Cases of isolation of *Staphylococcus Aureus* are regarded as a resident carriage. The presence of micrococci and sarcinomas can lead to the development of purulent-inflammatory diseases.

On the face, neck, and spine - the areas where a large number of sebaceous glands are located - one of the predominant species is *Cutibacterium acnes*. In areas with high concentrations of sweat glands, non-pathogenic acid-fast mycobacteria and propionic acid bacteria are found in large numbers. The skin of the feet is often affected by fungi. Fungi of the genus *Candida* may also be present in the folds of the skin.

The development of acne, psoriasis, and other dermatological diseases is associated with the appearance of pathogenic bacteria in the microbiota and opportunistic microorganisms with multidrug resistance.



Sources: Aging Analytics Agency analysis; Skin microbiome transplantation and manipulation: Current state of the art

Cosmetics for Skin Microbiome

Studies have shown that **not all cosmetics intended for daily use benefit the microbiota and the human body.** In particular, using antiperspirants can alter the composition of the microbial community of the armpit skin. The increase in the number of actinomycetes results in malodor.

Some studies suggest that **using antiperspirants may result in developing breast cancer in women.**

Products containing disinfectants, such as antibacterial soap and cosmetics changing the acid-base state of the skin, **may have a negative effect on human health.** Some components of cosmetics tend to change the composition of the microbiota. The lipids in the creams stimulate the multiplication of *Cutibacterium Acnes*, responsible for the appearance of a pustular rash on the skin.

The components of cosmetics, including preservatives and other toxic compounds, remain on the skin for several weeks, even if you take a shower every day. This means that their impact on health is much more profound than it might seem.

Using biome-friendly cosmetics helps restore the balance of microflora, eliminates aesthetic imperfections and symptoms of dermatological diseases, and improves the appearance and condition of the skin in the safest possible way.

Sources: Aging Analytics Agency analysis; The impact of skin care products on skin chemistry and microbiome dynamics

Companies Manufacturing Biotic Cosmetics and Ingredients:

m:ther dirt
RESTORATIVE SKIN PROBIOTICS

Aveeno
ACTIVE NATURALS

Dove

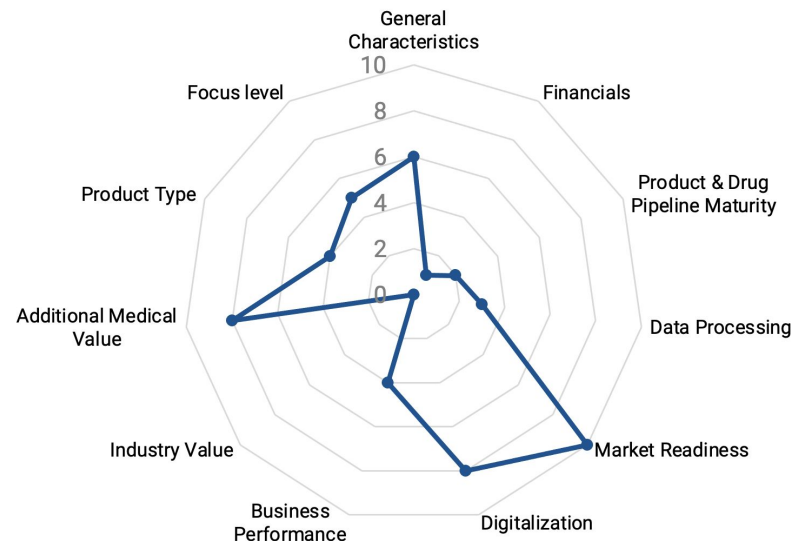

mibelle
GROUP biochemistry

Description

Viome is the first company to offer wellness as a service. Viome provides comprehensive health insights designed to help people track their microbiome health, mitochondrial health, cellular health, and biological age. The company's insights help users make suitable lifestyle and nutrition choices, enabling users to assess their internal ecosystem with simple personalized recommendations. Viome scientists have worked for over a decade to develop technology that offers unprecedented visibility into the body. With this, they can create a unique profile of the biochemistry and ecosystem inside of the customer and make personalized, actionable, and adaptive recommendations.

Website:	http://www.viome.com
Technology:	Microbiome of the Body
Number of Employees:	51-200
Founded in:	2016
Headquarter:	Bellevue, Washington, United States
Founders:	Naveen Jain, Deepak Savadatti
Total Funding Amount (\$):	N/A
Investors:	N/A

Source: Company's website



Description

AbbVie is a research-based biopharmaceutical company. It originated as a spin-off of Abbott Laboratories. The company is engaged in the discovery, development, manufacture, and sale of various pharmaceutical products. AbbVie provides innovative medicines compelling patient benefits, differentiated clinical performance, and economic value. The company plans to launch 20 new products or indications by 2020 that elevate the standard of care and address significant unmet needs. AbbVie's strategy is to deliver innovative medicines and to make a remarkable impact on people's lives.

Website: www.abbvie.com

Technology: Microbiome of the Body

Number of Employees: 10,000+

Founded in: 2013

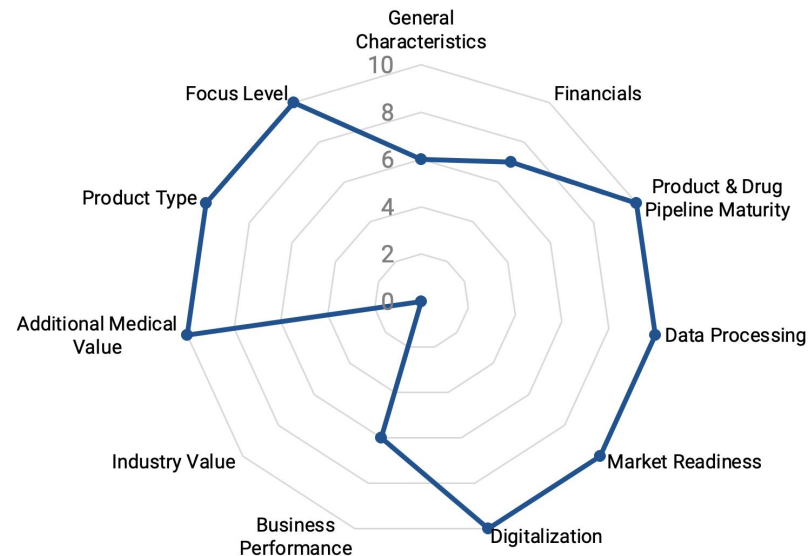
Headquarter: Chicago, Illinois, United States

Founders: N/A

Total Funding Amount (\$): N/A

Investors: N/A

Source: Company's website

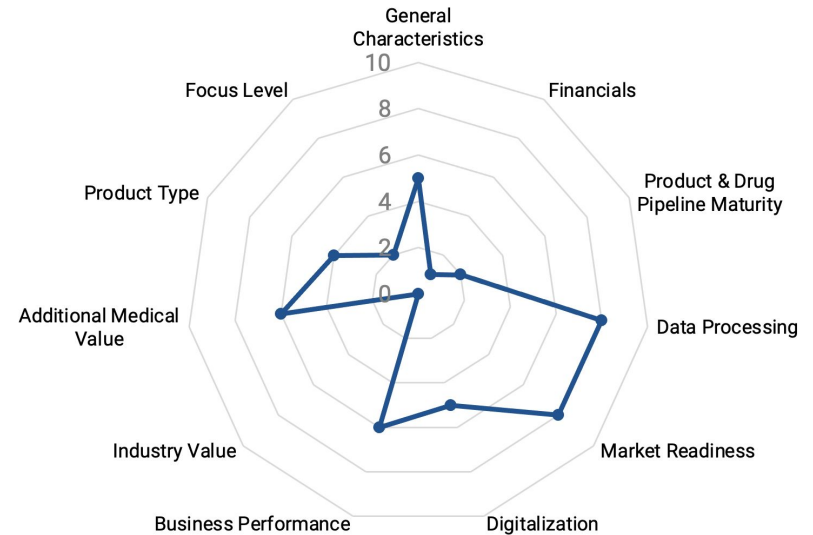


Description

Atlas Biomed Group is a personalized health company applying the latest genetic technologies to help its clients navigate their potential. The company analyses and interprets genetic data in saliva (the Atlas DNA Test) or stool (the Atlas Microbiome Test) and compares them with tens of thousands of scientific research papers and clinical guidelines. With the help of proprietary algorithms, the Atlas Biomed platform establishes a clear picture of a person's health risks. It provides personalized advice for health promotion, lifestyle improvement, and lifestyle disease prevention. In January 2020, the company established Atlas Japan Limited Liability Company in Tokyo to develop the Atlas healthcare ecosystem to improve the quality of life and contribute to preventive medicine for Japanese citizens.

Website:	https://atlasbiomed.com/
Technology:	Microbiome of the Body
Number of Employees:	51-100
Founded in:	2016
Headquarter:	London, England, United Kingdom
Founders:	Andrey Perfilyev, Sergey Musienko
Total Funding Amount (\$):	21 000 000
Investors:	N/A

Source: Company's website



Description

BIOMES is combining biotech & digital healthcare company based in Germany, whose mission is to improve the lives of all people by helping them to understand their bodies better based on their DNA, i.e., the human genome and the microbiome.

BIOMES distributes its first direct-to-customer product INTEST.pro, an intestinal-flora analysis kit designed to help customers learn about their intestinal flora and its impact on their lives. It can restore their intestinal balance using natural methods.

Website: <https://biomes.world/>

Technology: Microbiome of the Body

Number of Employees: 51-200

Founded in: 2017

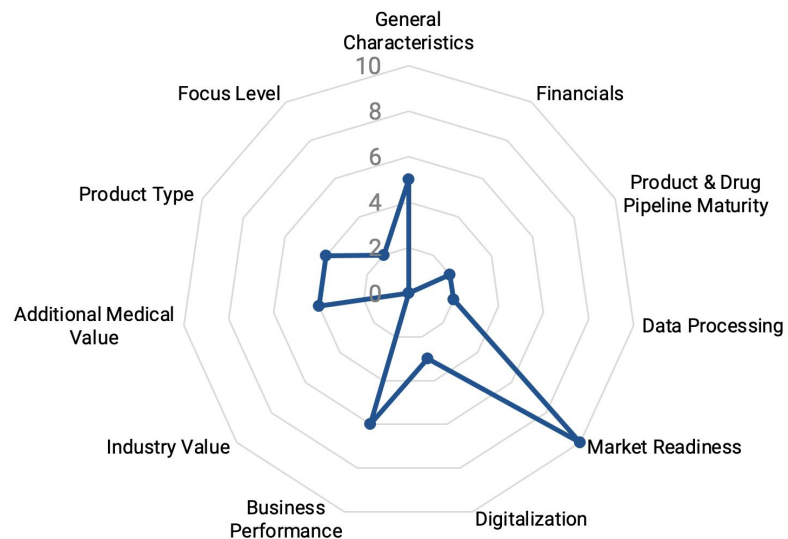
Headquarter: Wildau, Brandenburg, Germany

Founders: Andrej Wackerow, Carsten Krumbiegel, Christin Gunther, Paul Hammer

Total Funding Amount (\$): N/A

Investors: N/A

Source: Company's website



Description

Elsavie combines next-generation online learning with world-class scientific knowledge of microbiome and gut health tests. The company is a spin-off of the Center of Food and Fermentation Technologies (TFTAK) - an Estonian science-based company offering applied R&D to the food and biotech industries. Elsavie is a highly innovative powerhouse that has over 15 years of experience in collaborations across the globe, covering a wide area of research topics, for example, healthy functional foods; plant-based meat, and dairy alternatives; consumer science and sensory analysis; bioprocess optimization, and bacteria cultivation; studies of nutrition, dietary fibers, and microbial communities.

Website: <https://elsavie.com>

Technology: Microbiome of the Body

Number of Employees: 1-10

Founded in: 2005

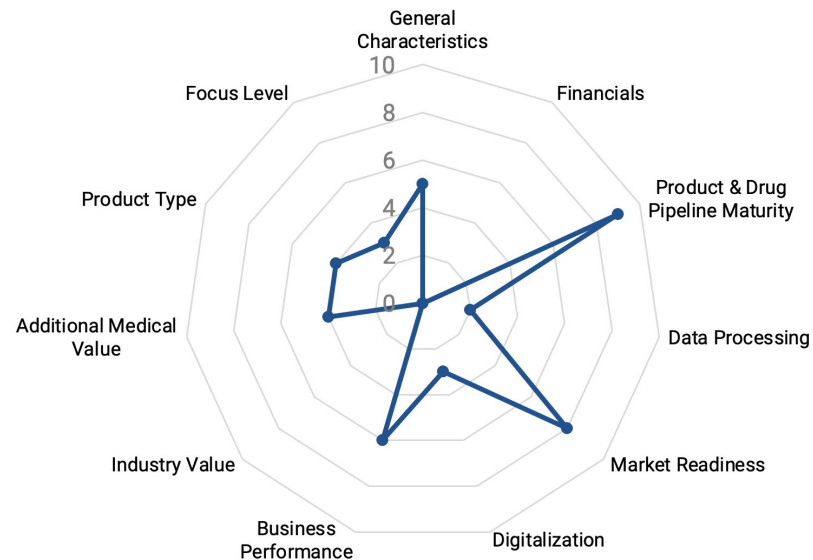
Headquarter: Estonia

Founders: N/A

Total Funding Amount (\$): N/A

Investors: N/A

Source: Company's website



Microbiome of the Face



Facial Skin Microbiota Composition

The microflora of the facial skin of an adult person is made up of **microorganisms belonging to 19 taxonomic ranks (aka phyla)**, of which bacteria are the most numerous. They are **divided into four fillets**, such as:

- **actinobacteria;**
- **firmicutes;**
- **bacteroides;**
- **proteobacteria.**

It's worth noting that the small number of dominant taxonomic ranks is compensated for by a significant diversity of microorganisms at the phyla level. In addition to bacteria, **the skin is also populated by archaea and phages**. 88% of skin archaea is populated by Thaumarchaeota and Euryarchaeota phylum.

The microbiome formation is **impacted by internal and external factors**, such as the level of hormones, diseases of internal organs, and the intensity of exposure to ultraviolet radiation and medications.

The microorganisms found on the skin can be tentatively divided into 3 large groups

Non-pathogenic,
the ones that are neutral for the human body

Tentatively pathogenic,
the ones that can cause disease when the body's immune system is weak

Pathogenic,
the ones that are the main cause of inflammatory and purulent-inflammatory processes

The Functions of the Skin Microbiome

Functions:

- 1 regulation of the acid-base balance of the skin, production of sebum, and moisturization of the skin;
- 2 suppression of the reproduction of pathogenic microorganisms;
- 3 formation of local immunity of the skin and its resistance to pathogenic bacteria.

Acidic pH Value:

- inhibits the growth of pathogenic bacteria, and more specifically, aureus and pyogenic staphylococci (Staphylococcus aureus and Staphylococcus pyogenes);
- creates favorable conditions for skin-neutral coagulase-negative staphylococci and corynebacteria.

The mouths of the sebaceous glands are colonized by facultative anaerobes, such as Propionibacterium Acnes (P. Acnes). Propionibacteria actively hydrolyze sebum triglycerides to form free fatty acids (FFAs). **A significant concentration of FFAs, lactic acid released with sweat, and acidic waste products released by microorganisms residing on the skin's surface, contribute to the change in the acid-base state of the skin and an increase in its acidity.**

The **overwhelming number of non-pathogenic microorganisms ensure that pathogens entering the skin cannot multiply and have to compete for nutrients.** Usually, smears taken from the skin can contain small quantities of the genus Candida, mites Demodex folliculorum, and Demodex brevis; however, thrush and candidiasis develop only under the conditions of decreased immunity.

The constant presence of non-pathogenic and opportunistic microorganisms is a significant factor in forming the skin's immunological barrier. Keratinocytes of the epidermis recognize pathogenic bacteria, fungi, and viruses through the pattern recognition receptors (i.e., Toll-like receptors, mannose receptors, and NOD-like receptors) present on the skin surface. In response to the presence of pathogens, keratinocytes produce antimicrobial peptides, cytokines, and chemokines, which ensure an adaptive immune response.

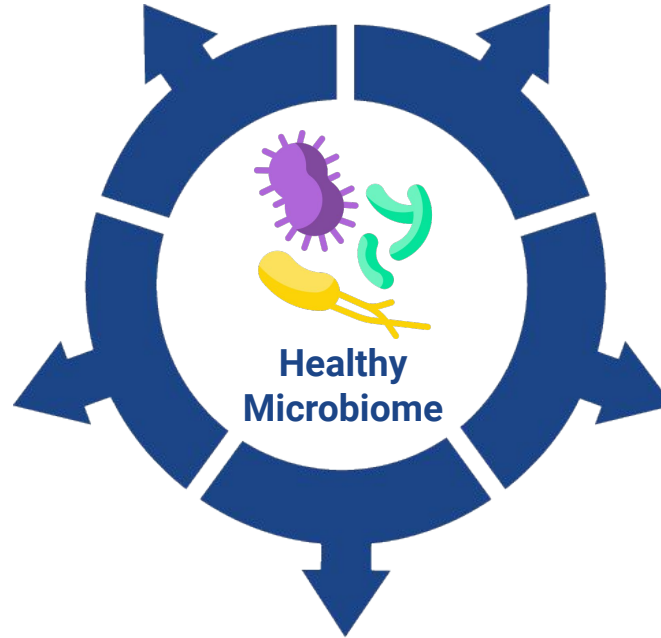
Ways of Normalizing the Facial Microbiome

TAKING POSTBIOTICS

Apply postbiotics, metabolic products of microbial cells, and fragments of bacterial cell walls to the skin

BASIC SKIN HYGIENE

Eliminate factors contributing to the disbalance of beneficial microorganisms on the skin



PROFESSIONAL FACIAL CLEANSING

Make the process of removing bacteria

TAKING PREBIOTICS

Use prebiotics and substances that have a beneficial effect on the structure and function of the microbiome

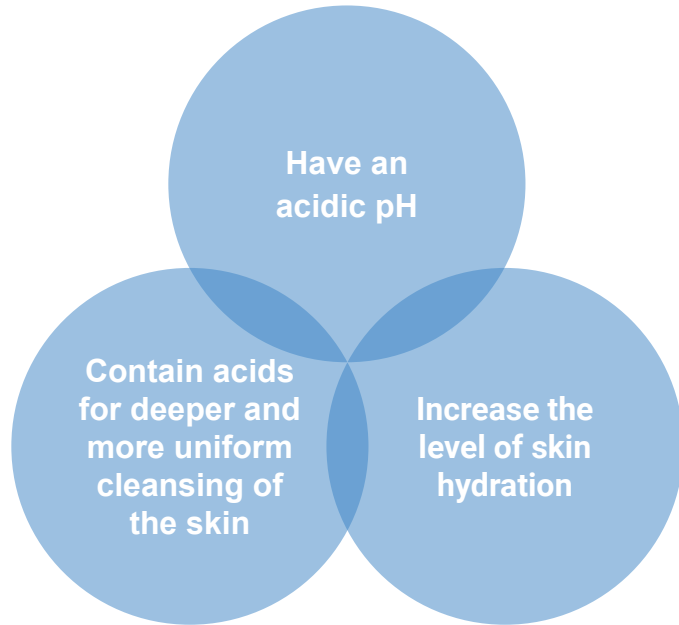
TAKING PROBIOTICS

Add probiotics and substances containing "beneficial" bacteria

Cosmetics for the Normalization of the Facial Microbiome

Nowadays, selecting biome-friendly cosmetics is no longer a problem. **Many cosmetics manufacturers are developing and producing products adapted to a particular skin type and its microflora.**

Product that is adapted to a particular skin type and its microflora can:



Probiotic cosmetics containing live bacteria are of the greatest interest. What makes them difficult to produce is that the preservatives and water contained in them have a detrimental effect on microorganisms; therefore, live or lyophilized lactobacilli are often added to lotions and creams.

The effectiveness of encapsulated bacteria is actively debated. Because lactobacilli are not a component of the microbiota of an adult person, it is doubtful that a product containing preservatives can lead to a change in the qualitative composition of the microbial community and significantly change the microflora of the face.

Research is currently being conducted into substances containing a lyophilisate of Staphylococcus epidermidis bacteria. Tests involving volunteers revealed that the drug actively inhibits the reproduction of Staphylococcus aureus, increases the level of glycerol and lipids in the skin's protective layer, and reduces the intensity of moisture evaporation.

Apart from epidermal staphylococcus, microorganisms oxidizing ammonia should also be kept in mind. These bacteria can absorb such sweat components as ammonia and urea and break them down into nitrite and nitric oxide. It is believed that they were previously part of the skin microbiome; hence, reintroducing them into the ecosystem will positively impact human health.

Live bacteria that oxidize ammonia, and pre- and postbiotics, are included in Mother Dirt Restorative Skin Probiotics skincare products.

Sources: Aging Analytics Agency analysis; Pilot study on novel skin care method by augmentation with Staphylococcus epidermidis, an autologous skin microbe

Bacteriophage-Based Cosmetics

Bacteriophages are viruses that selectively infect bacterial and archaeal cells. Using bacteriophages to normalize the composition of microbial communities in the human body is a veritable technological breakthrough. **It makes it possible to create products capable of selectively eliminating pathogenic bacteria** from the skin microflora without negatively impacting beneficial microorganisms.

Benefits of Using Phages in Cosmetology:

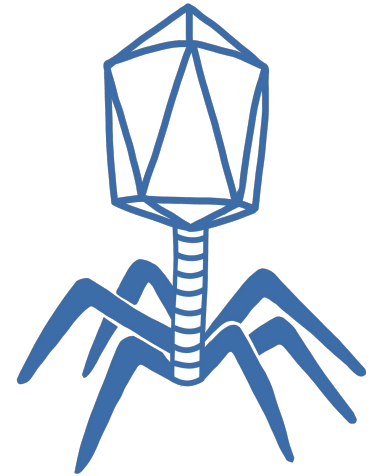
High Level of Specialization

Capable of infecting certain types of cells, streptococcal, staphylococcal, Klebsilian, coliprotein, and other bacteriophages are actively used in cosmetology. Being safe for human and animal body cells, they also ensure beneficial microflora.

Maintaining a Dynamic Balance in the Ecosystem

An increase in the number of phages is proportionate to the number of bacterial targets. When cells of a suitable type are unavailable, phages can retain their ability to infect cells for decades.

Bacteriophage



Cosmetics for Skin Microbiome: Summary

- 1 The modern cosmetic industry is firmly resolved to unlock the secret of the skin microbiome and its effect on the condition and appearance of the face.
- 2 Quite a few cosmetic companies and institutions are currently conducting extensive research into the microbiome, developing drugs that can improve skin condition and not just "disguise" the problem.
- 3 Pharmaceutical companies are also involved in research into microbial communities of the skin, which means that microbiotic drugs capable of treating dermatological diseases and purulent wounds may soon be available on the market.
- 4 In the future, biotic therapy will be used to 'transplant' individual strains and entire microbial communities from one person to another to restore and change the microbiome. This method has proved to be highly efficient in gastroenterology; hence, it's planned to be used to treat acne and atopic dermatitis.

Description

Haut.AI provides skincare brands with a B2B SaaS tool for AI analysis of their customers' skin. The solution is available as an API and SDK and can be easily integrated into an existing website or app. Skin SaaS provides the essential tools for building skin analysis apps. It allows brands to have truly engaging interactions with their customers. For skincare R&D, it offers the clinical software required to conduct effective tests and consumer studies. Skin SaaS is the best solution for tracking vital skin health parameters and allows skincare retailers and brands to enhance their customer experience with data-driven technology.

Website: <https://haut.ai/#top>

Technology: Microbiome of the Face

Number of Employees: 11-50

Founded in: 2018

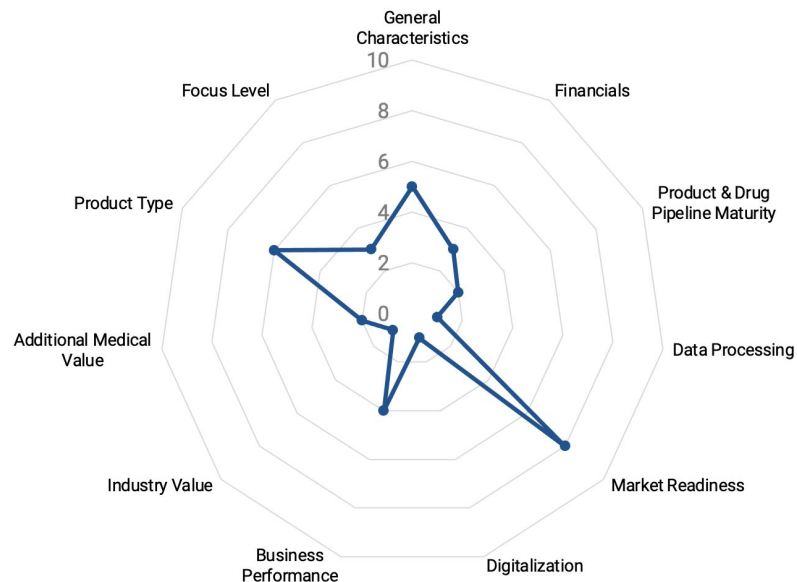
Headquarter: Tallin, Estonia

Founders: Alex Zhavoronkov

Total Funding Amount (\$): N/A

Investors: N/A

Source: Company's website

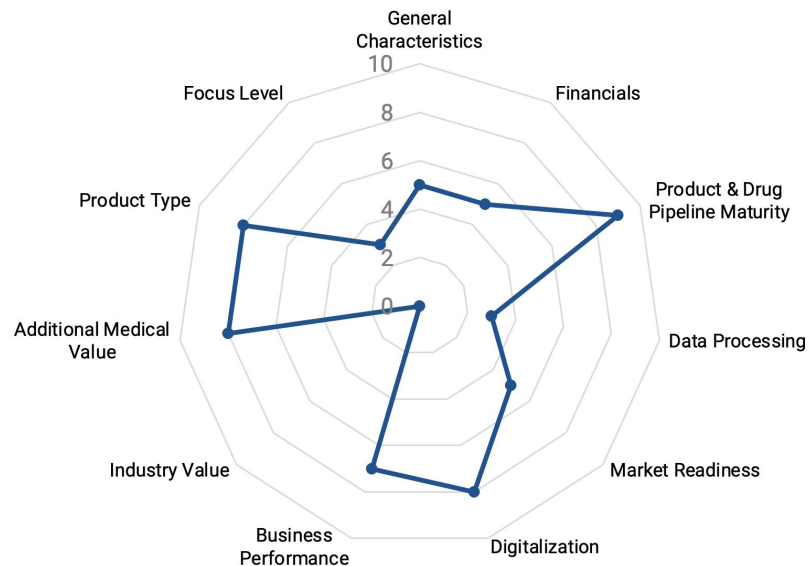


Description

DSM creates innovative products and services in Life Sciences and Materials Sciences that contribute to the quality of life. DSMs products and services are used globally in various markets and applications, supporting a healthier, more sustainable, and more enjoyable way of life. End markets include human and animal nutrition and health, personal care, pharmaceuticals, automotive, coatings and paint, electrical and electronics, life protection, and housing. DSM employs some 23,500 people worldwide. The company is headquartered in the Netherlands, with locations on five continents. DSM is listed on Euronext Amsterdam.

Website:	http://www.dsm.com
Technology:	Microbiome of the Face
Number of Employees:	10,001+
Founded in:	1902
Based in:	Heerlen, Limburg, The Netherlands
Founders:	Darren Magarro
Total Funding Amount (\$):	12 500 000
Investors:	Draper Associates, Crossbow Ventures, Netinvest, HighCrest Management Group, First Security Van Kasper

Source: Company's website

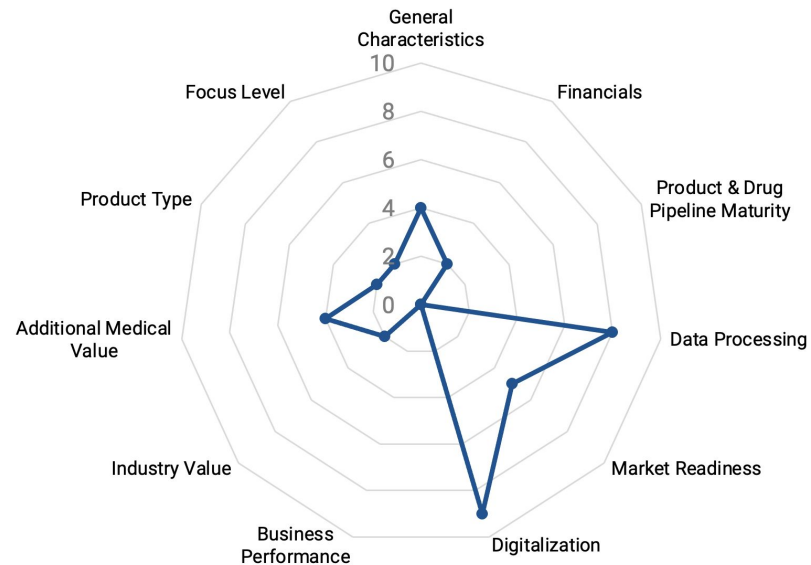


Description

Gallinée is the world's first skin and haircare line dedicated to the health and wellbeing of Planet You. At Gallinée, they believe in working with the client's microbiome to help it to look after the client. Gallinée's products contain a patented complex of prebiotics, probiotics, and postbiotics to nourish and support the good bacteria that make your ecosystem – helping them to look after even the most sensitive skin. A balanced microbiome is a key to good skin. And what the client's microbiome needs the most is healthy bacteria. Prebiotics, probiotics, and lactic acid are great for promoting healthy bacterial growth on the skin. Good bacteria protect your skin, fight for its balance and wellbeing.

Website:	https://www.gallinee.com/
Technology:	Microbiome of the Face
Number of Employees:	2-10
Founded in:	2016
Based in:	London, England, United Kingdom
Founders:	Marie Drago
Total Funding Amount (\$):	N/A
Investors:	Unilever Ventures

Source: Company's website



Description

Ellis Day is reinventing skincare using breakthrough phage science as a natural and clean approach to improve skin health and wellness without the use of harsh chemicals or synthetic toxins. Symbiotic Ellis Day Skin Science pioneer natural phage-based products that balance the microbiome by eradicating bacteria associated with skin problems and enabling good bacteria to flourish. This natural process addresses skin issues, including blemishes and breakouts, redness, inflammation, and dryness. Phages, a natural bioactive already present in skin, target only harmful bacteria, helping to enrich the skin's beneficial bacteria to restore and maintain a balanced, healthy skin microbiome naturally.

Website: www.ellisdayskinscience.com

Technology: Microbiome of the Face

Number of Employees: 2-10

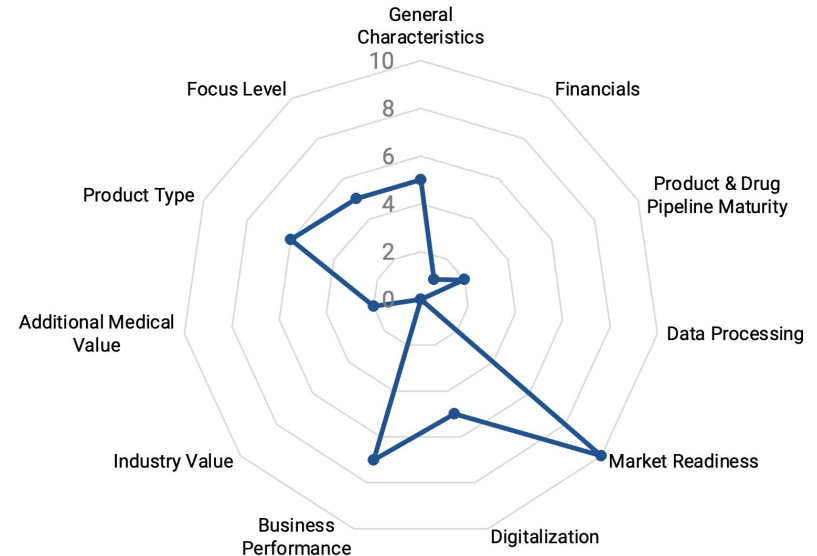
Founded in: 2017

Based in: South San Francisco, California

Founders: Carol Christopher

Total Funding Amount (\$): N/A

Investors: N/A



Source: Company's website

Description

AOBiome is a Boston-based biotech company focused on transforming human health through products that restore ammonia-oxidizing bacteria (AOB). The company is developing a novel therapeutic class to improve skin health, hypertension, and other systemic conditions. AOBiome has completed six Phase 2 clinical programs and multiple preclinical programs. Over 1,000 patients have been enrolled in clinical trials since 2016. In 2021, the company is enrolling 600 patients in a double-blind placebo-controlled trial to treat adults with pruritus associated with atopic dermatitis in support of its lead program.

Website: <http://aobiome.com/>

Technology: Microbiome of the Face

Number of Employees: 1-10

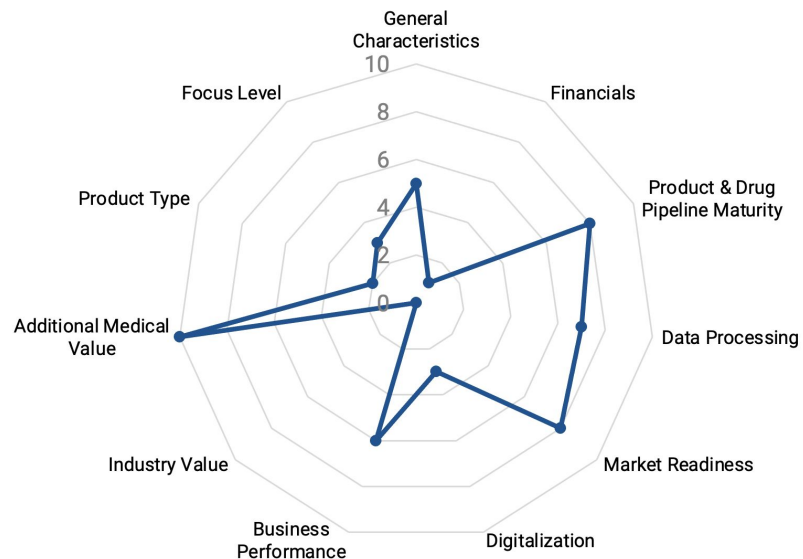
Founded in: 2013

Based in: Greater Boston Area, East Coast, New England

Founders: David Whitlock, James Heywood, Spiros Jamas

Total Funding Amount (\$): N/A

Investors: N/A



Source: Company's website

Oral Hygiene



Healthy and Dysbiotic Oral Microbiota

The **oral microbiota** is a collection of microorganisms from various taxonomic groups. As the human body evolved, they adapted themselves to it, populating the oral cavity as a kind of ecological niche. By forming biochemical and immunochemical relations with its host organism, the microbiota is in a state of dynamic equilibrium with it.

There's a total of **350 types of microorganisms residing in the oral cavity**. The oral microbiota is characterized by significant stability; however, its quantitative indicators can vary significantly within a day.

The distribution of microbiota in the oral cavity is uneven. **Up to 90% of all bacterial cells in it are concentrated in soft deposits on the teeth and tartar.**

The oral cavity microorganisms are divided into three large groups

The Resident Group

Species and strains that are beneficial for humans; having adapted themselves to their macroorganism, they're constantly present in the biotop.

Pathogenic Species

They're actively displaced from a healthy microbiota; however, they can play a crucial role in developing dental diseases, periodontium, and disorders of mucous membranes of the mouth and lips.

The Transient Group

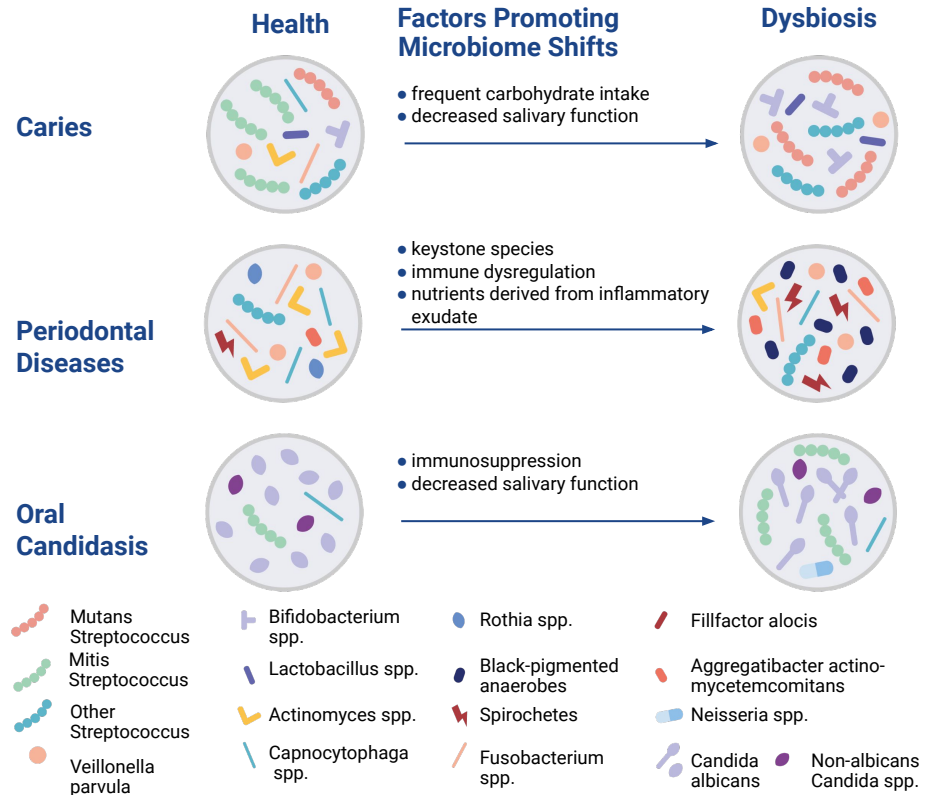
It consists of microorganisms constantly entering the oral cavity from the environment and unadapted to long-term existence in the human body.

Healthy and Dysbiotic Oral Microbiota

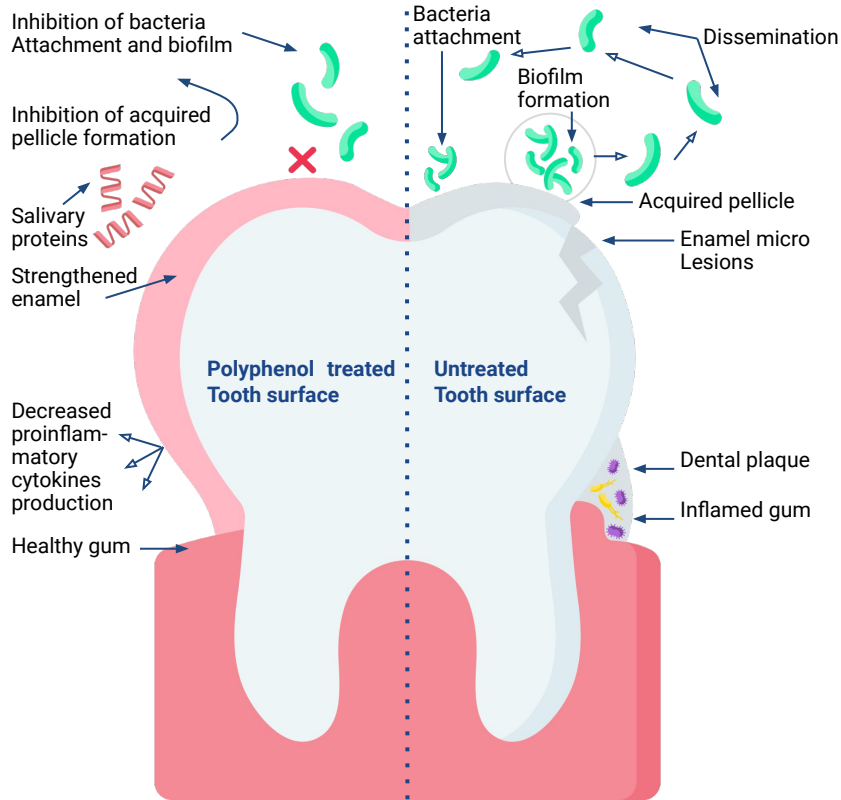
The main task of microflora is to protect the oral cavity from pathogenic microorganisms. Beneficial bacteria present in it synthesize lysozyme, acidophilus, and bacteriocins that suppress the proliferation of pathogens and stimulate lactic acid production, a substance required for maintaining normal pH values in the oral cavity.

Dysbiosis is an imbalance in the microbiota characterized by the prevalence of opportunistic and pathogenic bacteria. In the oral cavity, these include acid-forming cariogenic and periodontopathogenic bacteria. The main cariogenic bacteria are called Streptococcus Mutans.

As a rule, an increase in periodontal pathogenic bacteria's invasive and toxic properties occurs due to metabolic disorders in the periodontal tissues, endocrine imbalance, and negative external factors. A prerequisite for increased virulence of periodontal pathogenic microorganisms is the lack of probiotic microbes capable of inhibiting the reproduction of pathogens and displacing them from the biocenosis in the oral microbiota.



Oral Homeostasis



The **biological balance of the oral cavity** is maintained by the structural and functional state of tissues, the composition of the microbiota, and the acid-base state of physiological fluids.

Tooth enamel is normally a semi-permeable membrane. It does not have any cellular elements necessary for its regeneration during a person's life. However, due to the active diffusion of calcium salts, fluorine, organic and inorganic compounds from saliva and intercellular fluid of the pulp, the enamel crystal lattice is restored, thus protecting the deeper layers of the teeth. **The quality of the enamel is also affected by the pellicle**, a thin transparent biofilm on the teeth surface. The pellicle contains mucin and saliva glycopeptides, minerals, and immunoglobulins. Due to selective permeability, the pellicle regulates the processes of maturation and remineralization of enamel and protects the surface of hard tissues from acids.

The **microbiota of the oral cavity participates in the formation of the pellicle and its protective properties**. A significant disruption of oral homeostasis causes tooth decay and loss.

Correlation Between the Oral Microbiota and the Condition of the Human Body

Cariogenic and periodontal pathogenic microorganisms have a negative effect on the condition of the human body. Toxic substances released by them enter the bloodstream and require neutralization by liver and kidney cells; they also cause inflammatory processes in the tissues of the vascular intima.

Dysbiosis of the oral cavity

Heart and Blood Vessels

There's an established relationship between inflammatory lesions of the periodontium (caused by an increase in the periodontal pathogenic flora) and atherosclerosis of the aorta, coronary, and other large vessels of the body. Bacteria and endothelial cells cause endothelial dysfunction, inflammation, and atherosclerosis. By stimulating the production of mediators with atherogenic and inflammatory properties, bacteria can have an indirect effect.

Respiratory System

In 30-40% of cases, the flora of the oral cavity becomes the cause of aspiration pneumonia and lung abscesses. Pathogenic oral flora can also cause pulmonary emphysema and candidiasis.

Digestive System

The similarity in morphofunctionality, innervation, and humoral regulation suggests a link between periodontal diseases and pathological changes in the digestive system. Active growth of *Helicobacter pylori* (acid-fast bacteria) in the oral cavity provides further evidence of that. Statistically, periodontal disease is detected in 78% of patients with chronic gastritis, duodenogastric reflux, erosions, and peptic ulcers.

Sources: Aging Analytics Agency analysis; Periodontal pathogens in atheromatous plaques. A controlled clinical and laboratory trial

Methods for Normalizing the Oral Microbiota Composition

Tooth decay is a common oral disease and one of the major causes of tooth loss. Quite a **few methods** have been proposed to normalize the oral microbiota, eliminate or reduce the proportion of caries bacteria in the symbiotic flora.

Dietary Changes

High titers of Streptococcus Mutans, Actinomyces Viscosus, and Lactobacteria are an indication of a carbohydrate-rich diet. Replacing carbohydrates, and primarily sucrose, with sugar substitutes (e.g., xylitol) leads to a decrease in acid formation and accumulation of glycans.

Caries Immunotherapy

Typically, the development of caries is hampered by the local immunity of the oral cavity. Secretory IgA inhibits the adhesion of Streptococcus Mutans to an enamel surface, thereby reducing the number of bacteria in the microbiota.

Safety of Toothpastes

Streptococcus Mutans are capable of adhesion to a smooth enamel surface. Mechanically removing plaques is not enough because surfaces are rapidly re-colonized with the microbial population. Chemical compounds with antiseptic and probiotic properties can tackle the issue.

Chlorhexidine

Using 0.2% chlorhexidine reduces the number of Streptococcus Mutans cells in cariogenic plaques by 85% and in saliva by 55%. In addition to the direct bactericidal effect, chlorhexidine disrupts the adhesion process of microorganisms, thereby preventing the re-colonization of enamel and mucous membranes.

Fluorine and Its Compounds

Fluorine and its salts (e.g., phosphatase, endolase, and phosphorodismutase) inhibit the action of enzymes involved in glycolysis in Streptococcus Mutans. This leads to the inhibition of acid production and the inhibition of microorganisms' activity.

Enzyme-Based Systems

Using toothpaste containing enzymes for 14 weeks resulted in a significant reduction in gum inflammation, gum bleeding, and plaque. It was also conclusively proven that using toothpaste with enzymes and proteins resulted in much healthier gums.

Sources: Aging Analytics Agency analysis; Gingival health status in individuals using different types of toothpaste

Methods for Normalizing the Oral Microbiota Composition

Probiotics

Toothpaste often contains probiotic species of lactobacilli. Being a relatively new form of dental probiotic products, lingual probiotics, a lozenge containing strains of beneficial bacteria, help prevent caries, eliminate bad breath, and reduce the rate of plaque formation.

Plant Extracts

Herbs are considered a viable alternative to artificial antimicrobial components contained in oral hygiene products. Conducted tests have shown a significant improvement in the condition of the oral cavity and gums, as well as a decrease in the accumulation of dental plaque.

Propolis

Being rich in biologically active substances, propolis has a pronounced antibacterial, immunomodulatory, and anti-inflammatory effect. Its antimicrobial effect is even more pronounced against pathogenic bacteria.

Bacteriophages

Bacteriophages are a type of virus that selectively destroys certain types and strains of pathogenic bacteria. Bacteriophage therapy may well be the number one treatment in the future. In dentistry, products for the normalization of the oral microbiota can already be used in a home setting.

Sea and Table Salt

By changing the pH balance from acidic to alkaline, sodium chloride (which is a salt used in cooking) is able to produce a bacteriostatic effect. Having anti-inflammatory properties, it can also help accelerate the repair of microdamage in soft tissues.

Description

Since 1989, Designs for Health has been the health care professional's trusted source for research-backed nutritional products of superior quality. Designs for Health are driven by a higher purpose. The company is an activist for health – rooted in and united by science. They are transforming boundaries, breaking barriers, setting new standards, disrupting the status quo. Designs for Health believes in science-based nutrition and natural medicine, developing health products without compromise, and advancing the way education and technology support wellness for all. At the Designs for Health, holistic thinking comes first, and functional medicine becomes conventional medicine.

Website: <http://www.designsforhealth.com>

Technology: Oral Hygiene

Number of Employees: 251-500

Founded in: 1989

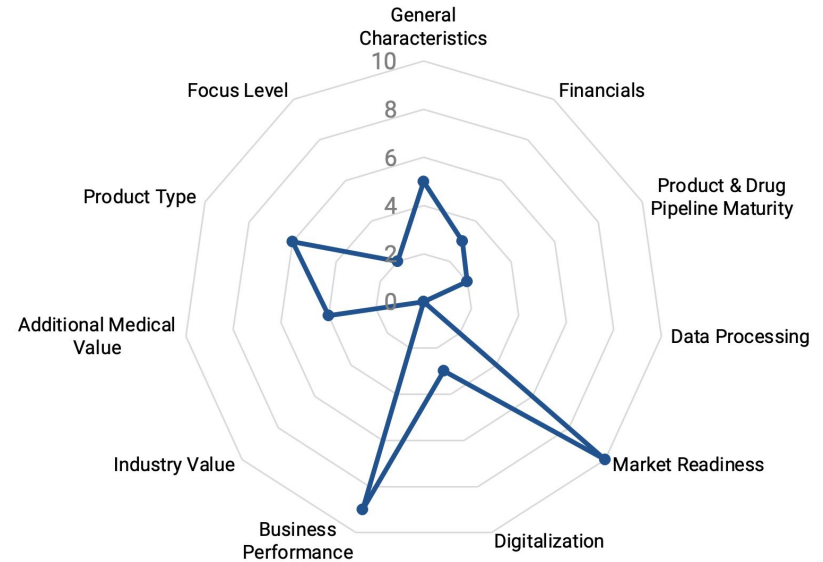
Based in: Suffield, Connecticut, United States

Founders: N/A

Total Funding Amount (\$): N/A

Investors: N/A

Source: Company's website

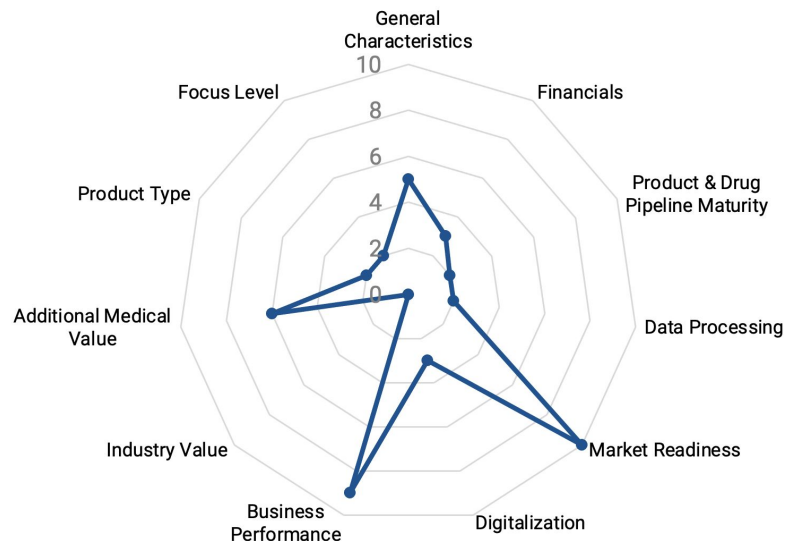


Description

NOW Food produces high-quality natural products at prices everyone loves. They are a respected leader in the natural products industry, aiming to provide value in products and services that empower people to lead healthier lives. NOW Solutions offers a complete line of fluoride-free toothpaste and mouthwashes formulated with only the highest quality ingredients. The oral care products are non-GMO, vegetarian/vegan, and feature xylitol as the main ingredient. Flavors for adults include cinnamon and mint and feature additional innovative ingredients such as coconut oil, neem, tea tree, and baking soda. Flavors for kids include orange, bubblegum, and strawberry. All NOW Solutions oral care products are formulated to clean and whiten teeth and freshen breath.

Website:	https://www.nowfoods.com
Technology:	Oral Hygiene
Number of Employees:	501-1000
Founded in:	1968
Based in:	Bloomington, Illinois, United States
Founders:	Elwood Richard
Total Funding Amount (\$):	N/A
Investors:	N/A

Source: Company's website

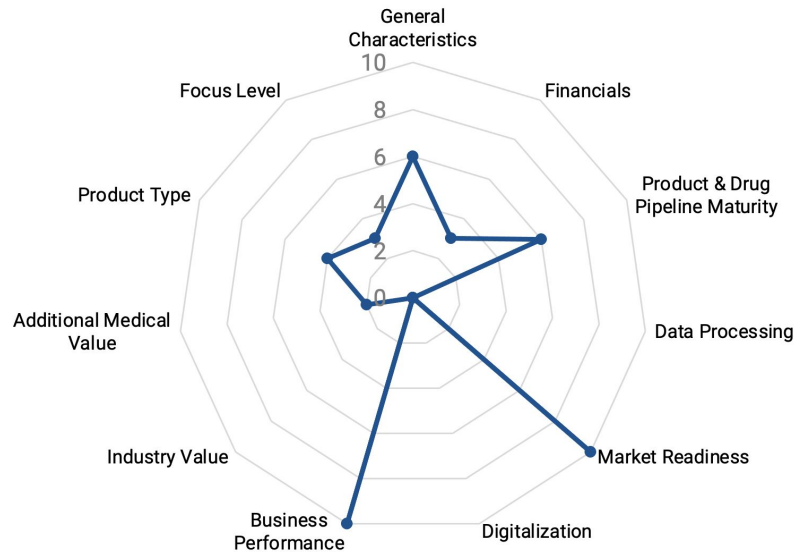


Description

Weleda is a globally active manufacturer of natural cosmetics, nutritional supplements, and over-the-counter (OTC) drugs with a strong foothold in Germany, Switzerland, and France. Cosmetics generate roughly two-thirds of Weleda's revenues. Developed with dentists, Weleda's carefully formulated toothpaste contains the purest plant extracts in a mineral base to clean teeth gently but thoroughly, prevent the plaque build-up, and keep the gums healthy and strong, naturally. All formulas are free of harsh ingredients, such as detergents, artificial ingredients, fragrances, bleaches, chemical preservatives, and fluoride.

Website:	http://weleda.com
Technology:	Oral Hygiene
Number of Employees:	1001-5000
Founded in:	1921
Based in:	Irvington, New York, United States
Founders:	Ita Wegman, Dr. Rudolph Steiner
Total Funding Amount (\$):	N/A
Investors:	N/A

Source: Company's website



Description

Desert Essence carries products such as tea tree oil soap, face serum with pomegranate, and natural oral care products. Inspired by the beauty and resilience of nature and powered by the potency that comes from the desert, Desert Essence is proud to offer a range of products for the body that help nourish the body and senses. Products for oral care are formulated without fluoride and carrageenan. Plant-based toothpaste help keep teeth and gums healthy with botanical care. Nurturing Aloe helps soothe gums, while Baking Soda, Zinc Citrate, and antioxidant-rich White Tea help fight buildup. Neem—the Ayurvedic “toothbrush”—helps neutralize bacteria, while Australian Eco-Harvest Tea Tree Oil helps fight cavity-forming sugar acids.

Website: <https://www.desertessence.com>

Technology: Oral Hygiene

Number of Employees: 51-200

Founded in: 1978

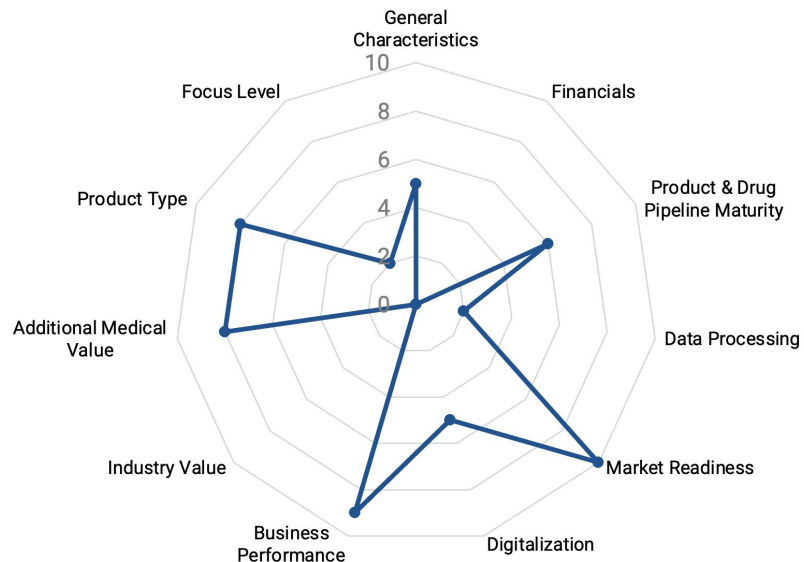
Based in: New York, United States

Founders: Julia Beardwood

Total Funding Amount (\$): N/A

Investors: N/A

Source: Company's website



Description

Hyperbiotics believes that all health begins in the gut. This belief (though backed by tremendous research) has been reinforced through personal experience. Armed with research and invigorated with possibilities, the concept that bacteria is both the foundation and the future of health ignited my quest to formulate a better probiotic. Hyperbiotics were born.

Using patented technology, Hyperbiotics, proud to say that the company has developed one of the world's most survivable probiotic supplements at an affordable price and help people feel their best daily by delivering to them the benefits probiotics have to offer.

Website: <https://www.hyperbiotics.com>

Technology: Oral Hygiene

Number of Employees: 201-500

Founded in: 2013

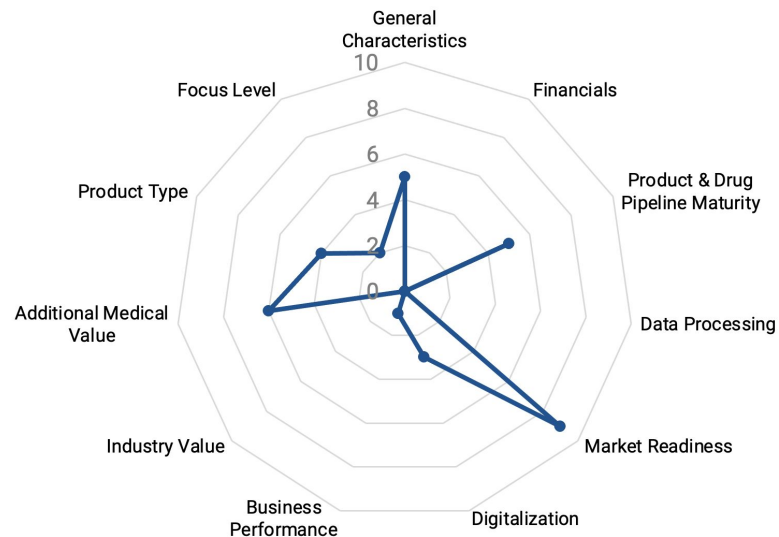
Based in: Heber City, Utah, United States

Founders: N/A

Total Funding Amount (\$): N/A

Investors: N/A

Source: Company's website



Fat Optimization, Weight Optimization



Weight Optimization: Introduction

Tackling the overweight and obesity problem is one of the main tasks of modern aesthetic medicine. A person can be considered overweight if they have fat deposits under their jawline, as well as in their chest, waist, abdomen, and hips. In addition to causing all kinds of physical limitations and psychological problems, obesity significantly increases the risk of noncommunicable diseases (NCDs), including cardiovascular disease, cancer, and diabetes.

Thus, **one of the main priorities for modern aesthetic medicine and cosmetology is nutrition optimization, body weight control, and the prevention of obesity-related diseases.**

Nowadays, technologies, tools, and medicines designed to solve problems with weight optimization and obesity are becoming increasingly available.

Modern cosmetology can help to cope with obesity, control weight, and avoid related complications. Rapid advances in biotechnology allow us to not only cope with a specific problem but also prevent its occurrence.

Source: Media overview

Solutions in Weight Management

Hardware Cosmetology

Plastic Surgery

Cosmetological Physiotherapy

Supplements

Body Condition Tests

Nutritional Body Control

Methods for Determining the Condition of the Body

Anthropometric Criteria for the Biagnosis of Obesity

Body mass index:

body weight (kg) / height² (m²)

Allocate a body weight deficit (<18.5 kg / m²), normal body weight (18.5-24.9 kg / m²), overweight (24.9-29.9 kg / m²), obesity I (30, 0-34.9 kg / m²), II (35.0-39.9 kg / m²) and III degree (≥40.0 kg / m²)

Waist circumference is an indicator of central obesity. It is measured between the iliac crest and the 12th rib or at the narrowest point of the trunk. FROM> 102 cm in men or> 88 cm in women indicates the presence of abdominal obesity.

Waist/Hip Ratio: an indicator of abdominal and gynoid obesity. Thigh circumference is measured at its widest point. Ratio values of ≥0.9 in men or ≥0.8 in women are used as criteria for measuring abdominal obesity.

Metabolic disorders, such as metabolic syndrome and cardiorespiratory training are assessed as well. Using alternative anthropometric criteria or non-invasive methods to measure local body fat (aka abdominal, subcutaneous, and perivascular adiposity) can also provide additional prognostic information.

Most Common Types of Body Analysis

Bioimpedance Analysis (BiA)

Magnetic Resonance Imaging (MRI)

Dual-energy X-ray Absorptiometry (DEXA)

Bioelectrical Impedance

Total Body Counting and Neutron Activation

Devices Controlling the Condition of the Body

Thanks to advances in technology and science, compact, accurate, and **affordable devices allowing one to control the main parameters of their body in a home setting are becoming increasingly available.**

One of such devices is a **multifunctional body composition monitor** capable of measuring various parameters of the body, including weight, body mass index (BMI), body fat percentage, and visceral fat.

Measurement is done by passing a very weak electric current through the user's body. The current is imperceptible and absolutely harmless to humans. By analyzing the data on the resistance of individual tissues of the body to the current, the device determines the amount of adipose tissue and the general condition of the body according to a specific algorithm.

Devices ensure a complete list of measurements of body parameters:

- Weight - total body weight;
- The proportion of muscle mass in the body - a percentage of muscle mass in total weight; a useful option for sports fans;
- The amount of fat in the body - the total percentage of fat determined based on the body mass; helps overweight individuals control the process of losing excess weight;
- Indicators of the mass index in the body - the height to weight ratio;
- Bone mass - indicators of skeletal mass;
- Percentage of water in the body - makes it possible to control the proportion of water in the body; Basal metabolic rate - the minimum value of the energy that the body expends;
- Physical age of the body

Most popular body measuring
devices producers

TANITA

OMRON

POLAR®

GARMIN™

Peculiarities and Dangers of Weight Optimization

Nowadays, technologies, tools, and medicines designed to solve weight optimization and obesity problems are becoming increasingly available. **Dietary supplements capable of achieving weight loss in the shortest possible time, body-sculpting devices requiring no surgery (or better still, using the patient's own tissues for liposculpture) and massages helping painlessly optimize metabolism are already there.**

However, if used negligently, modern technologies can cause enormous harm to the patient's health. Before resorting to any of them, one should consult with qualified and experienced doctors. They will help them determine the list of permissible manipulations and the procedure for their implementation.

Due to the structural differences in the male and female body, dietary supplements may cause the opposite effect. For example, using certain herbal components may inhibit the production of testosterone in men and provoke the production of estrogen, which can negatively affect their body. Using ultrasonic cavitation technology with an insufficient thickness of the fat layer (less than 15 mm) can lead to the destruction of the bone layer in the affected area and the formation of skin burns. Speeding up metabolism can lead to liver and kidney problems and increase the risk of heart disease.

Dangerous Effects of Rapid Weight Loss Include:

Headaches

Constipation

Irritability

Menstrual Irregularities

Fatigue

Hair Loss

Dizziness

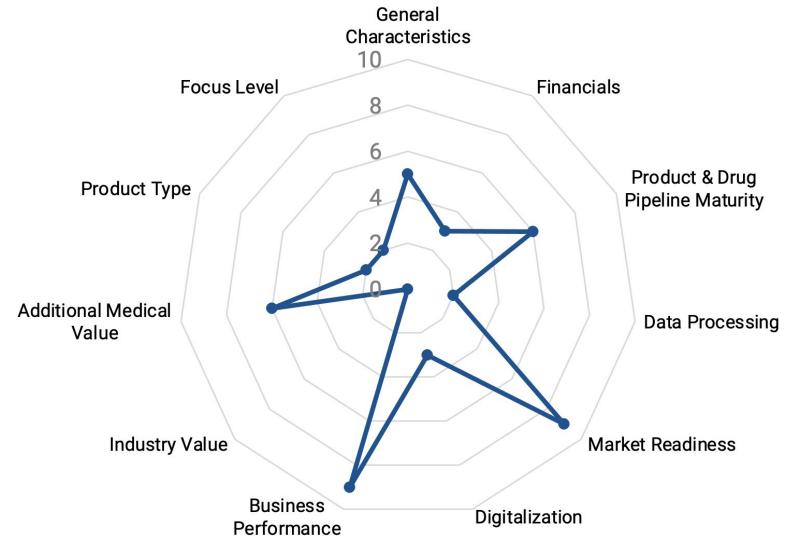
Muscle Loss

Description

Life Extension is the health solutions expert translating scientific research into everyday insights for people wanting to live their healthiest lives. For almost 40 years, Life Extension has pursued innovative advances in health, conducting rigorous clinical trials and setting some of the most demanding standards in the industry to offer a full range of quality vitamins and nutritional supplements, and blood-testing services. From multivitamins to high-potency vitamin D3, formulations do more than merely address minimum nutritional requirements. Indeed, they often exceed Recommended Dietary Allowances (RDA) because they're based on research that's revealed what our bodies need for optimal health.

Website:	https://www.lifeextension.com
Technology:	Fat Optimization, Weight Optimization
Number of Employees:	251-500
Founded in:	1980
Based in:	Florida, United States
Founders:	N/A
Total Funding Amount (£):	N/A
Investors:	N/A

Source: Company's website



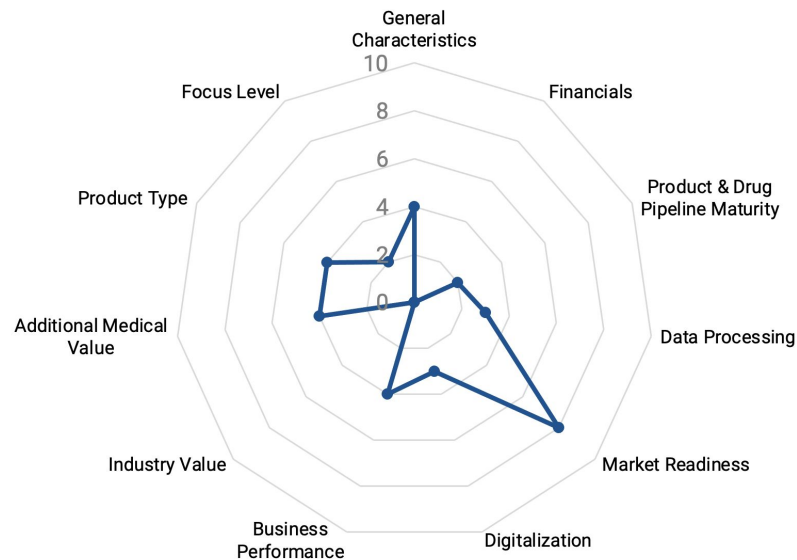
Description

Cryomed is making cryo saunas (also known as cryotherapy machines, cryotherapy systems, cryotherapy chambers, or cryo capsules). Cryomed has been producing Cryosaunas (also known as cryotherapy machines, cryotherapy systems, cryocapsules) since 2002.

Besides the manufacturing of equipment, Cryomed provides full service and support for the products at any stage. Delivery of whole-body and local cryotherapy equipment, installation, maintenance, and support, as well as marketing and staff training – all these services are available to customers and dealers.

Website:	https://cryomedpro.com/
Technology:	Fat Optimization, Weight Optimization
Number of Employees:	11-50
Founded in:	2002
Based in:	Nitra, Slovakia
Founders:	N/A
Total Funding Amount (£):	N/A
Investors:	N/A

Source: Company's website



Description

The Baldan Group works on the wellness and body care sector by merging technology, experience, and know-how. It is the perfect support to search for wellness and healthy solutions. The main aspects of the work carried out by the professionals working for Baldan Group are the strong commitment to continuous training and the attention towards the most innovative methods. T-Shape developed by Baldan Group combines three powerful technologies that act simultaneously, promoting collagen production and causing a considerable localized reduction in fat and skin laxity, resulting in an immediate increase in blood circulation and lymphatic drainage that improves physical shape.

Website: <https://www.baldangroup.com/en/>

Technology: Fat Optimization, Weight Optimization

Number of Employees: 51-200

Founded in: 1998

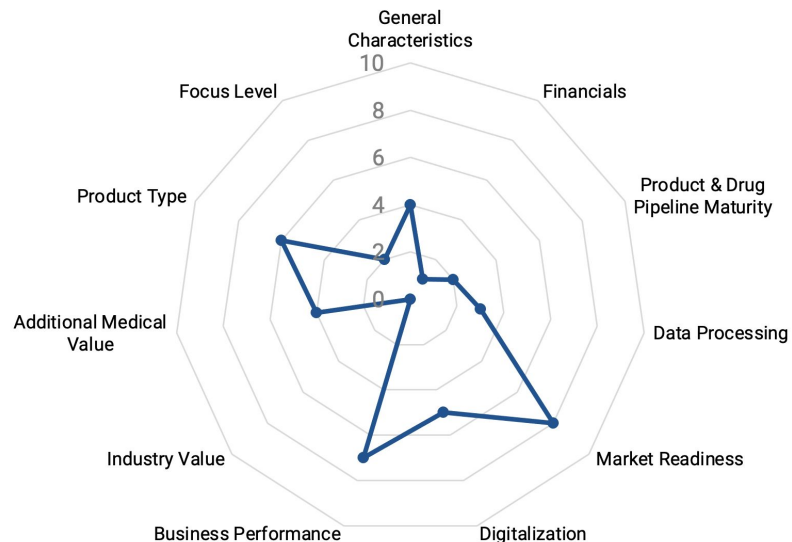
Based in: Milan, Italy

Founders: Antonio Baldan

Total Funding Amount (£): N/A

Investors: N/A

Source: Company's website



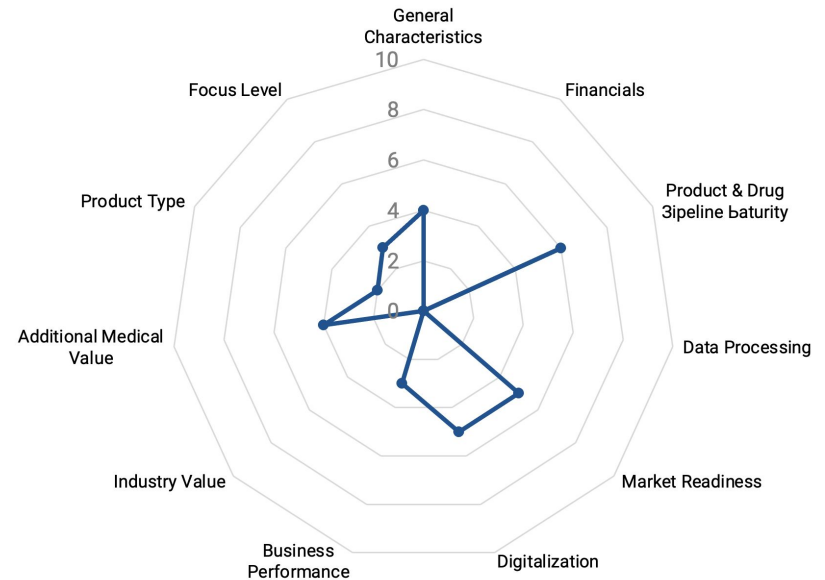


Description

Mego Afek was founded in the mid1960's at Kibbutz Afek in the North of Israel as a company producing pressure gauges. Based on the know-how in compression technology and in cooperation with Professor Avigdor Zelikovski, Chief of Vascular Surgery at Beilinson Hospital in central Israel, the company has developed the Lympha Press Line of medical devices for lymphedema treatment. For over 40 years, Mego Afek produces the most-well regarded dynamic compression therapy products, and helped patients all over the world deal with lymphedema, lipedema, and venous insufficiency, and improve their quality of life.

Website:	https://www.megoafek.com
Technology:	Fat Optimization, Weight Optimization
Number of Employees:	51-200
Founded in:	1972
Based in:	Afer, Israel
Founders:	N/A
Total Funding Amount (£):	N/A
Investors:	N/A

Source: Company's website

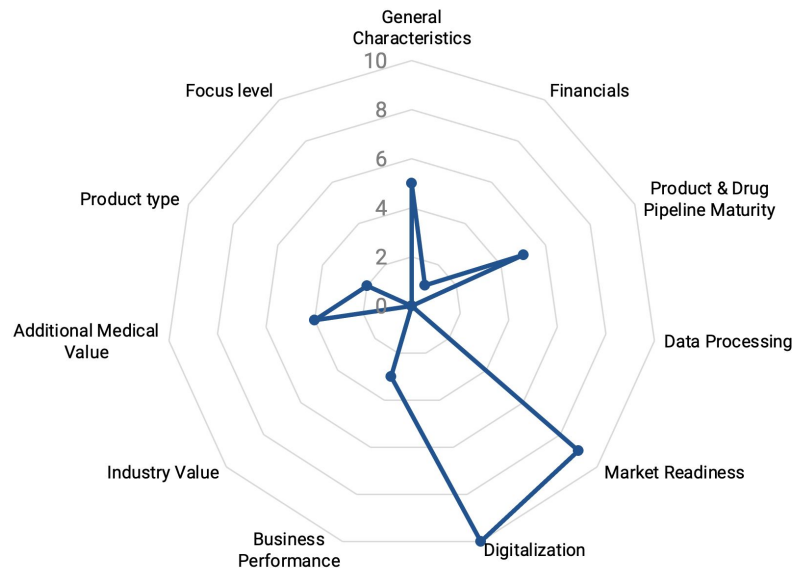


Description

Sakara is a wellness company anchored in food as medicine. To ensure peak nutrition, freshness, and deliciousness, we source all ingredients from trusted suppliers and organic farms that use healthy, sustainable agriculture practices. All products are backed by cutting-edge nutrition science and traditional healing wisdom to give the body what it needs to thrive. Sakara Life's organic program is based on a whole-food, plant-rich diet that includes fresh, nutrient-dense, and delicious ingredients. The nutritional pillars form the basis of each meal that comes to your door.

Website:	https://www.sakara.com
Technology:	Fat Optimization, Weight Optimization
Number of Employees:	51-200
Founded in:	2012
Based in:	New York, United States
Founders:	N/A
Total Funding Amount (£):	N/A
Investors:	N/A

Source: Company's website



Muscle Recovery



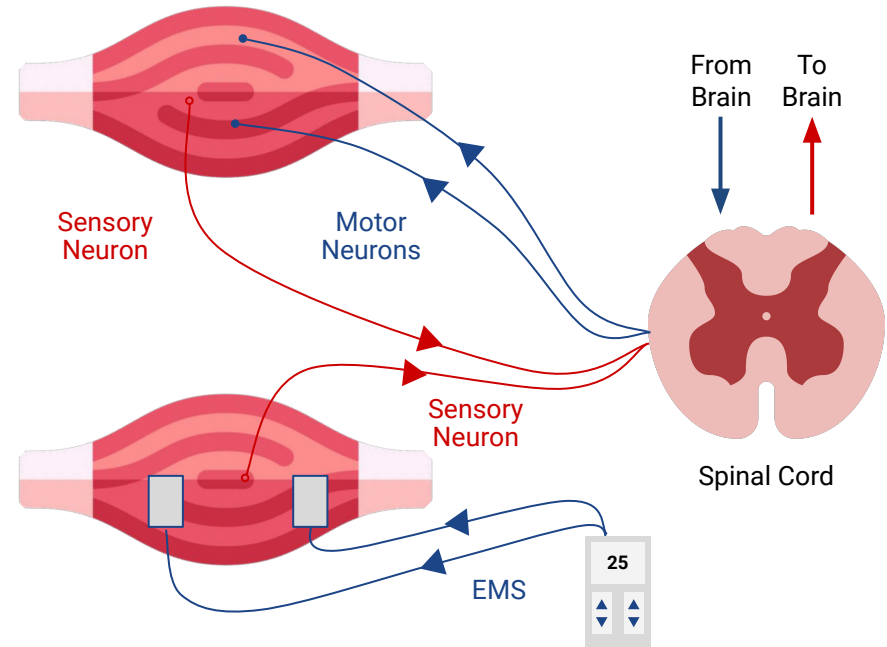
Electrical Muscle Recovery

Cosmetological procedures for body muscles are meant to improve body shape, combat excess weight and saggy muscles, and restore skin tone in the postoperative period. **Electrical stimulation is used to strengthen body muscles, reshape the body, increase skin tone and fight edema.**

Being a hardware-induced effect, electrical stimulation relies on myotonic currents that restore muscle tissue tone, lift and improve skin, boost microcirculation of lymph and blood, and enhance lipolysis of adipose tissue. During myostimulation, facial muscles, neck and décolleté area - the three areas which are quite difficult to train with the help of physical exercises - do get worked out. That results in an improvement in complexion and increase in skin elasticity.

Source: Corey Whelan

Electrical Muscle Recovery



Vacuum Roller Massage

Vacuum roller massage is used to combat cellulite and stimulate the gluteal muscles. The generated rarefaction increases the oxygen supply to the tissues, boosts the metabolic rate, and improves blood circulation.

Mechanical massage is done with a ball-point nozzle, while the rollers help reduce cellulite deposits in the tissues.

A combination of vacuum and rollers helps regenerate and strengthen the skin and stimulates lymphatic drainage.

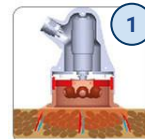
Types of vacuum massage:

- slimming body massage;
- lymph drainage body massage;
- anti-cellulite body massage;
- stiffening body massage.

Source: Donna Christiano

Vacuum Roller Massage Muscle Recovery

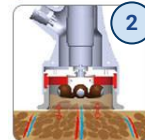
5 Steps:



1

Suctions Vacuum

5D Roller contact skin closely so skin sucked in inside, and then lifting the head, which make adipose Fall off.



2

360 degree Rotation

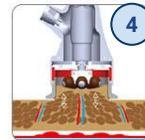
The muscle will be moved depend the suction and rerelease and 360 degree rotation roller.



3

Fixed Point - Rotation

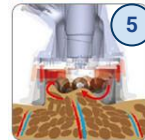
Put 5D roller on a skin place, and then suction power from weak to strong to extruding fat cells.



4

Moving - Rotation

Take 5D Roller to move and then lifting, which push fat to focus. Such as push the thigh fat into buttocks.



5

Lifting-Moving-Rotation

Lifting 5D roller to move, and then fixed a place, which could break fat cells quickly.

Cryotherapy

Therapeutic cooling of the whole body or parts of it is achieved either by immersion in cold water or a cryotherapy chamber. Treatment with cold has been used since ancient times and is considered a "natural" method. It is quite popular nowadays.

Aerocryotherapy is a method of cooling the body in a special chamber under ultra-low temperatures (down to -180°C). Being a non-specific corrective therapy, it helps prevent age-related changes in the body. Due to exposure to cold, blood vessels contract, causing the skin to become pale. Thanks to that, heat loss is reduced to a minimum. When the skin is exposed to extreme cold (-78°C), heat receptors send an electrical signal to the hypothalamus, an area of the brain where the thermoregulatory system is located.

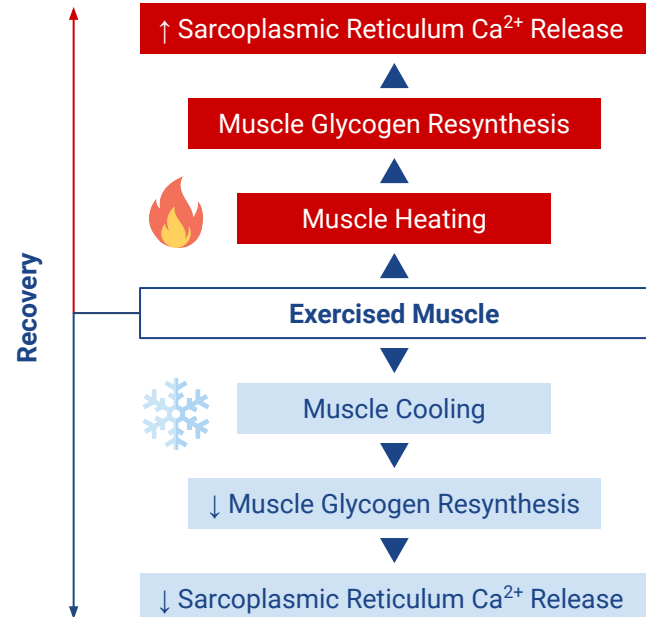
Cryosauna is primarily used to increase peripheral blood flow. A warm wave from within triggers the release of pain-blocking endorphins. Thanks to that, people cannot feel pain for 4-6 hours without pain relievers. Neither the liver nor the digestive organs are affected, and most importantly, the immune system is not inhibited.

Source: Online library website

Muscle Recovery via Temperature Impact

↓ Strength

↓ Endurance



↑ Strength

↑ Endurance

Pressotherapy

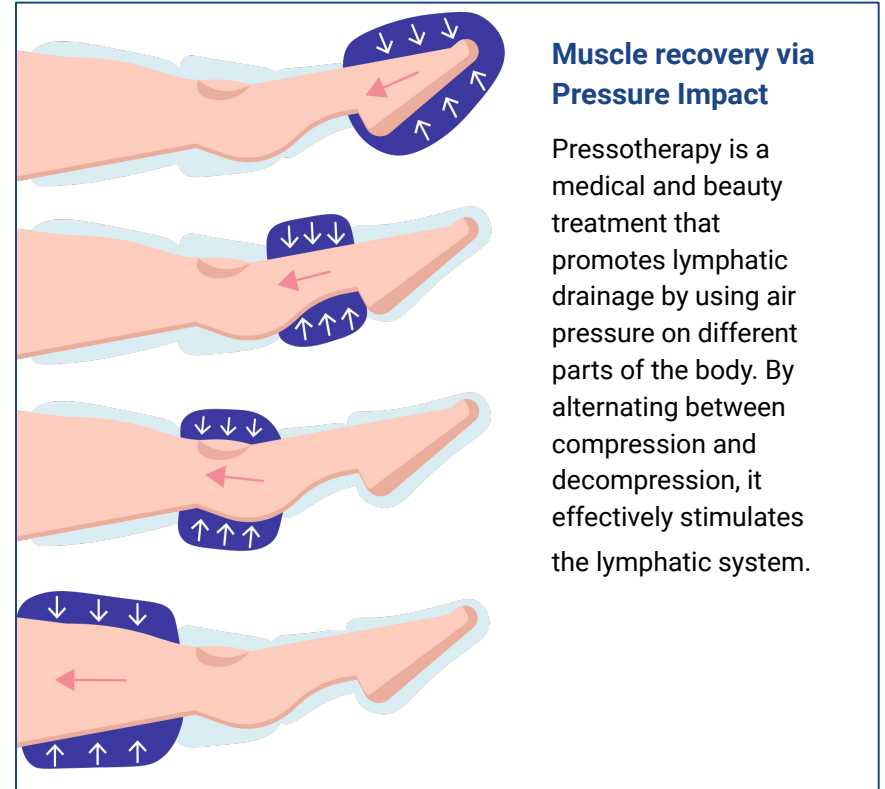
Pressotherapy is a procedure that is said to help with lymphatic drainage, thereby potentially slimming the look of the arms and legs (because they carry less fluid), easing aches and pains, and detoxifying the body. It uses an air pressure machine to inflate a suit that squeezes your arms, legs, or abdomen in a rhythmic motion, similar to a massage.

Pressotherapy stimulates the body's lymphatic system. When it's functioning optimally, the lymphatic system transports lymph, a fluid that contains white blood cells, to help fight infection.

Benefits of Pressotherapy include:

- relaxed muscles and fewer aches reduction in appearance of cellulite
- reduction of swelling and stiffness in the limbs
- removal of toxins
- toned and firm skin

Source: NCBI website



Muscle recovery via Pressure Impact

Pressotherapy is a medical and beauty treatment that promotes lymphatic drainage by using air pressure on different parts of the body. By alternating between compression and decompression, it effectively stimulates the lymphatic system.

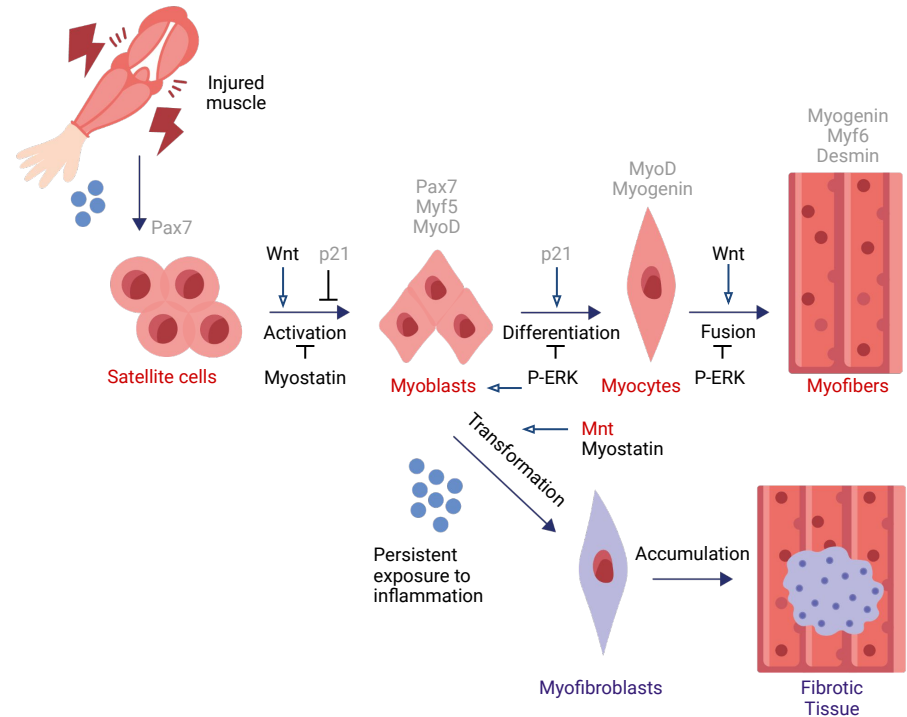
Specifics and Dangers of Muscle Recovery Procedures

Although the previously described procedures are generally safe, they should be postponed if a person contracts infectious or inflammatory diseases. **The stimulation may complicate the course of the disease and result in the aggravation of the general condition. Current-based stimulation is undesirable if a person is pregnant, uses a pacemaker, has a heart disease, suffers from low blood pressure, epilepsy, or multiple sclerosis, and recovers from surgery.**

During myostimulation, individual sensitivity of each patient to electric current should be taken into account. Frequency should be set at low intensity and then gradually increased. Prolonged exposure to current may result in an additive effect, which correctly formulated programs can partially set off. **However, to achieve the maximum effect, myostimulation procedures should be alternated with lymphatic drainage and electrolysis.**

Source: NCBI website

Cytokines Growth Process



Description

CRYO Science wants to inspire people to live their best and most powerful lives. The company is the leader in luxury cryogenic solutions, offering safe, state-of-the-art, and comfortable cryotherapy chambers for the whole body and localized procedures. CRYO Science is the global solutions provider for your cryogenic needs with offices and manufacturing in the United States, Europe, and the Middle East and hundreds of retail locations worldwide.

Website: <https://www.cryosc.com>

Technology: Muscle Recovery

Number of Employees: 11-50

Founded in: 2015

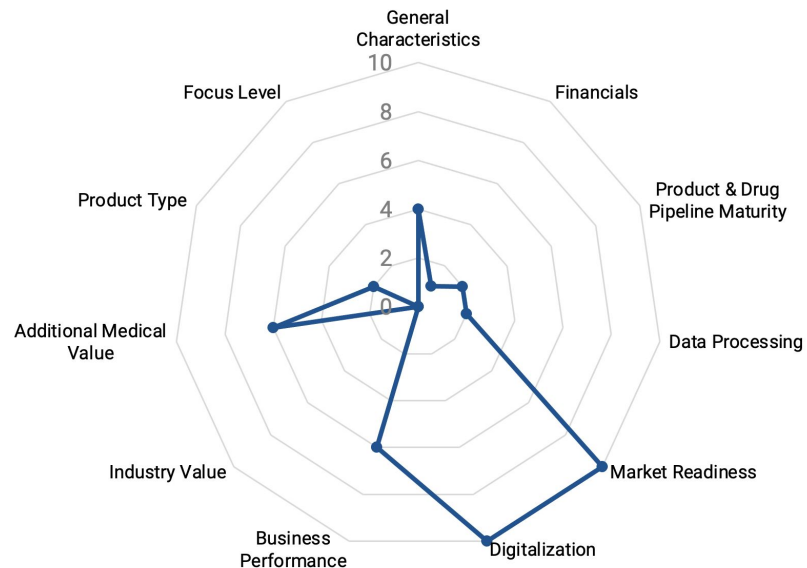
Based in: Unin, Poland

Founders: N/A

Total Funding Amount (£): N/A

Investors: CRYO Holdings

Source: Company's website



Description

Endymed, which was established in 2007, is a company that offers energy-based medical aesthetic treatment systems for both the professional and consumer markets. Endymed invests more in clinical research and validation of products and treatments, because of the knowledge that the key to success comes from the tremendous investment that made clinically validating treatment results. The Endymed devices are technologically sound and ergonomically friendly. Easy to understand and pleasure to use, they deliver predictable and reproducible results with high safety.

Website: <http://www.endymed.com>

Technology: Muscle Recovery

Number of Employees: 11-50

Founded in: 2004

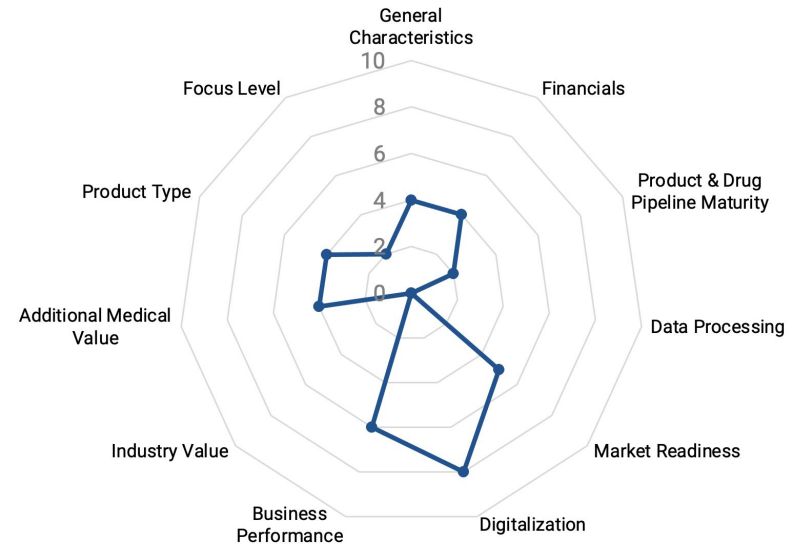
Based in: Hefa, Israel

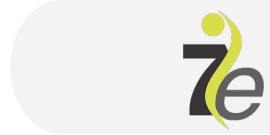
Founders: Yoram Harm

Total Funding Amount (£): N/A

Investors: N/A

Source: Company's website



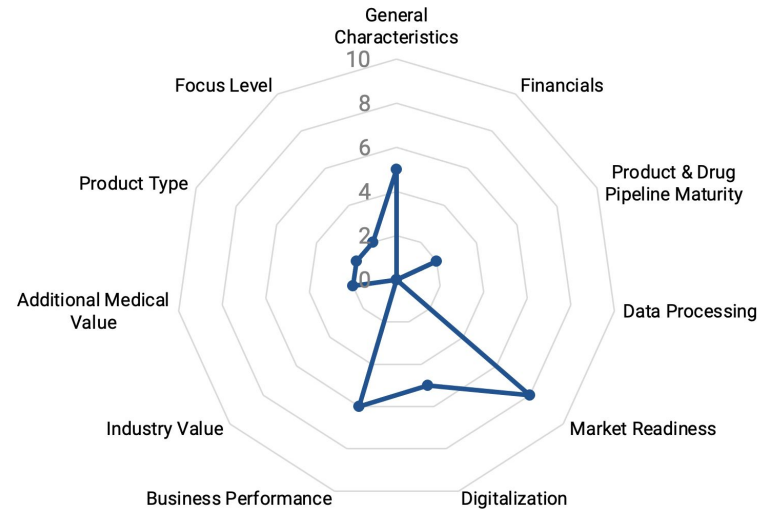


Description

As the trend toward Holistic health and beauty methods persists, more people are pulling away from invasive and surgical procedures. 7ewellness offers elite at-home and professional-grade microcurrent machines with result-oriented protocols. 7ewellness supports aestheticians, weight-loss centers, medical spas, and spa owners with education, training and ongoing innovative protocols that provide immediate results using our FDA-cleared and non-invasive products. 7ewellness provides the best microcurrent machines and technologies for Health, Wellness, and Beauty professionals worldwide. They are accommodating the high demand for non-invasive professional skincare.

Website:	https://www.7ewellness.com
Technology:	Muscle Recovery
Number of Employees:	51-100
Founded in:	2011
Based in:	United States
Founders:	N/A
Total Funding Amount (£):	N/A
Investors:	N/A

Source: Company's website



Description

Physiomed is one of Canada's largest and fastest-growing chains of healthcare clinics. Physiomed's founder, Dr. Scott Wilson, began helping Canadians improve their health in 1994. Since then, Physiomed has grown to over thirty clinics and is now expanding across Canada. With hundreds of highly skilled healthcare professionals from over a dozen healthcare disciplines, we're proud to improve the health and wellness of thousands of people. The whole health approach is about creating, strengthening, and educating for long-term health. We believe that by working with our patients to address their health challenges and achieve their health goals, we can help them live healthier, fuller lives.

Website: <http://www.physiomed.ca>

Technology: Muscle Recovery

Number of Employees: 1-10

Founded in: 1995

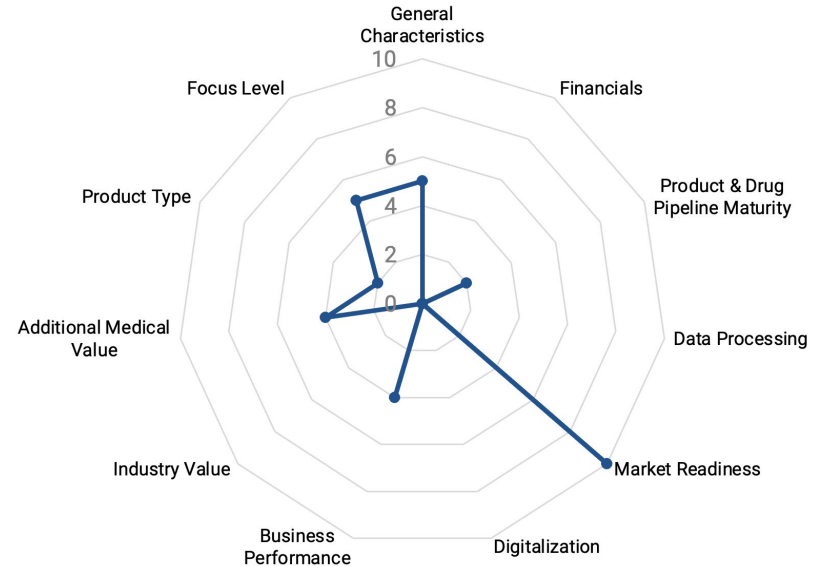
Based in: Oshawa, Canada

Founders: N/A

Total Funding Amount (£): N/A

Investors: N/A

Source: Company's website



Description

Tanita is a leading manufacturer of precision electronic scales that manufactures scales and body composition products for fitness and medical use. The company has received ISO 9001 certification, CE marking, membership in the JQA, FDA clearance, and the Good Housekeeping Seal for its technology, designs, and manufacturing standards. Tanita was founded in 1946 and is headquartered in Illinois. A Tanita body composition monitor can provide a snapshot of an individual's health and fitness status in under 20 seconds. With vital readings including body fat percentage, hydration, muscle mass, BMR, visceral fat, and lots more.

Website: <https://www.tanita.com/en/>

Technology: Muscle recovery

Number of Employees: 11-50

Founded in: 1946

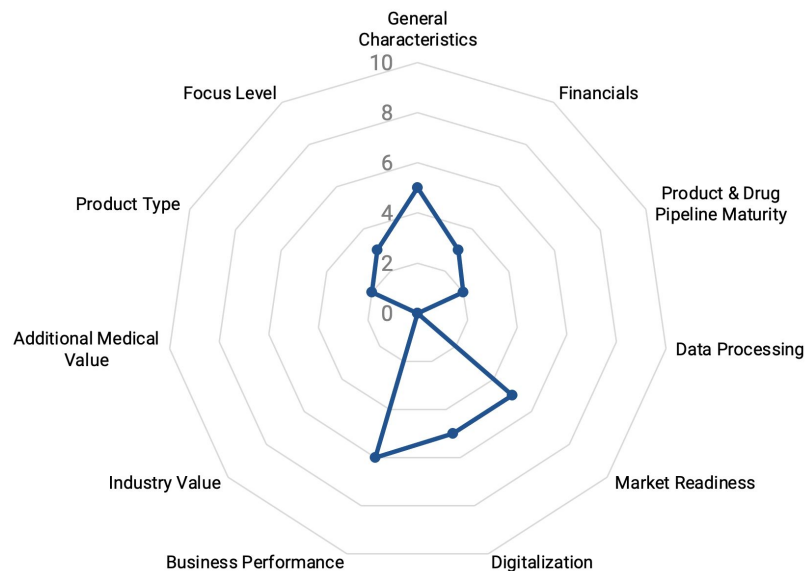
Based in: Illinois, United States

Founders: N/A

Total Funding Amount (£): N/A

Investors: N/A

Source: Company's website



Facial Skin and Hair, Cosmetic Surgery on the Face



Plastic Surgery

As with any other surgery, choosing a suitable surgical technique requires consulting with a doctor and taking into account the patient's health status.

Used for combating age-related changes and external signs of aging, plastic surgery is recommended for the following conditions:

- signs of early aging of the epidermis (wrinkles);
- deviated septum;
- sagging facial skin;
- nasolabial and glabellar folds;
- sagging cheeks;
- drooping eyelid;
- the need for aesthetic correction of the ears;
- loss of scalp hair.

Most Common Face Surgery Procedures

Face Lift Surgery

Ear Reshaping

Nasal Surgery

Lip Augmentation

Chin Correction

Hair Transplant Surgery

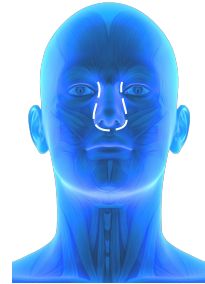
Face Surgery

Being minimally invasive, **face lift surgery is one of the most popular plastic surgery procedures nowadays.** It is performed using an endoscope (an optical device used for diagnostic and therapeutic purposes), which allows for more precise manipulation and reduces the risk of damaging neurovascular structures. No soft tissue excision is performed during face lift surgery.

An endoscopic brow lift helps smooth out and remove wrinkles on the forehead. **Unlike other plastic surgery procedures, it's less traumatic, leaves no scars, and requires a very short rehabilitation period** (one and a half week on average).

A rehabilitation period can take one to two weeks. Following the procedure, edema may typically occur. The later the patient resorts to the procedure, the more noticeable the traces of the surgical intervention on the face will be.

Types of Face Surgery



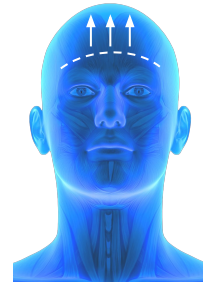
Rhinoplasty



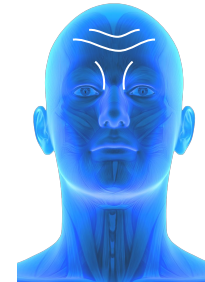
Blepharoplasty



Otoplasty



Forehead and
Brow Lift



Botox
Injections



Chin Dimple
Creation

Hair Transplantation

Hair transplantation is that it's suitable for both men and women. Currently, **the most popular hair restoration procedure is follicular unit extraction (FUE)**. Using a special device, hair follicles at the back or on the sides of the head are extracted and implanted in the affected area.

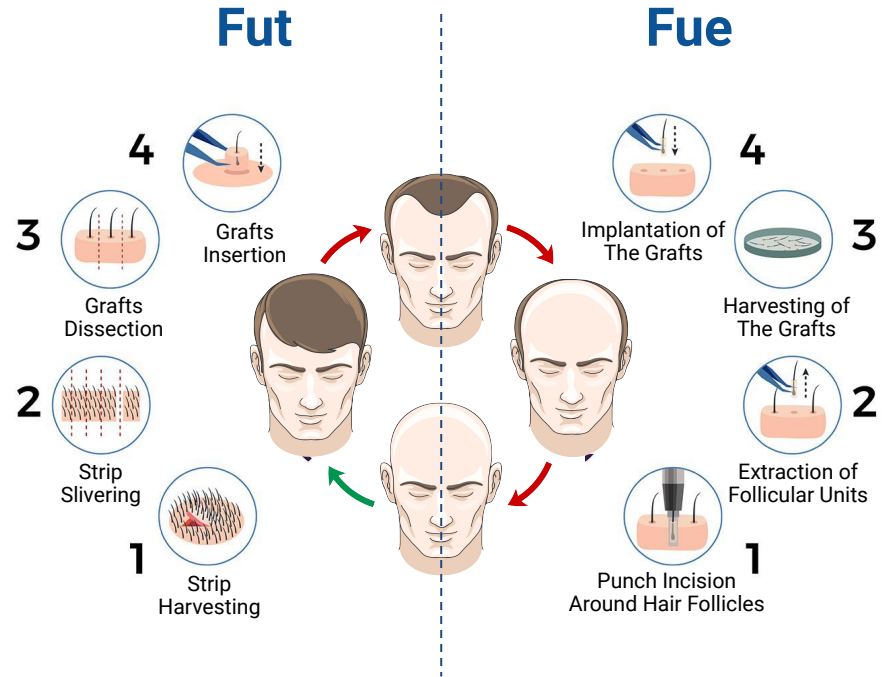
Unlike traditional hair transplant procedures, hair transplantation doesn't require removing a strip of the scalp from the back of the patient's head. **FUE is minimally invasive, has a fairly short rehabilitation period, and leaves no scars.**

Hair transplant surgery is painless. The result is often achieved in one go. With a large baldness area, the number of procedures may increase.

Reasons of Hair Transplantation:

- widespread thinning and baldness;
- hair loss due to chemotherapy or other medications;
- thick scalp scars from injuries.

Types of Hair Transplantation



Pore Reduction

Large pores are a worrying problem for most people, commonly found in individuals having oily skin. Overactive sebaceous (oil) glands usually cause this problem. As a result, the excess sebum extends up to the upper skin layer, causing a glossy look and unusually enlarged pores and leading up to the problem of comedones and inflammatory acne.

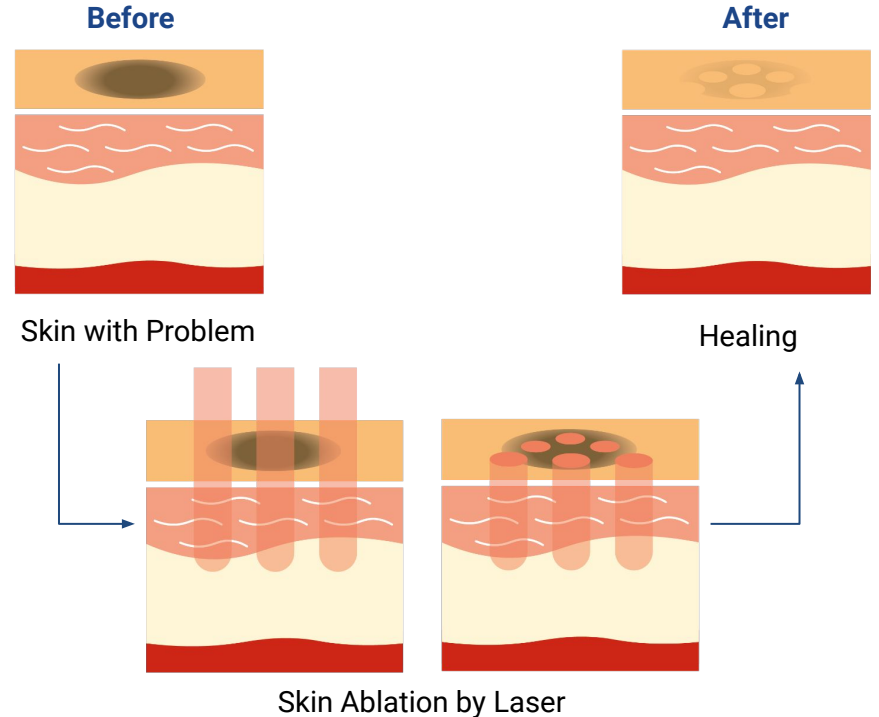
Intense **pulsed light (IPL)** may reduce the appearance of pores. This **technique uses highly targeted light pulses to stimulate collagen production**, even out skin tone, and reduce hyperpigmentation.

By improving skin texture and increasing firmness, **IPL helps ease skin issues that call attention to the pores.** This procedure takes little time and is relatively gentle,

Potential Danger of Laser Treatment

Lasers can harm the skin via photochemical or thermal burns. Depending on the wavelength, the beam may penetrate both the epidermis and the dermis. Laser exposure is also associated with an increased risk of developing skin cancer and premature aging (wrinkles, etc) of the skin.

Fractional Laser Skin Resurfacing

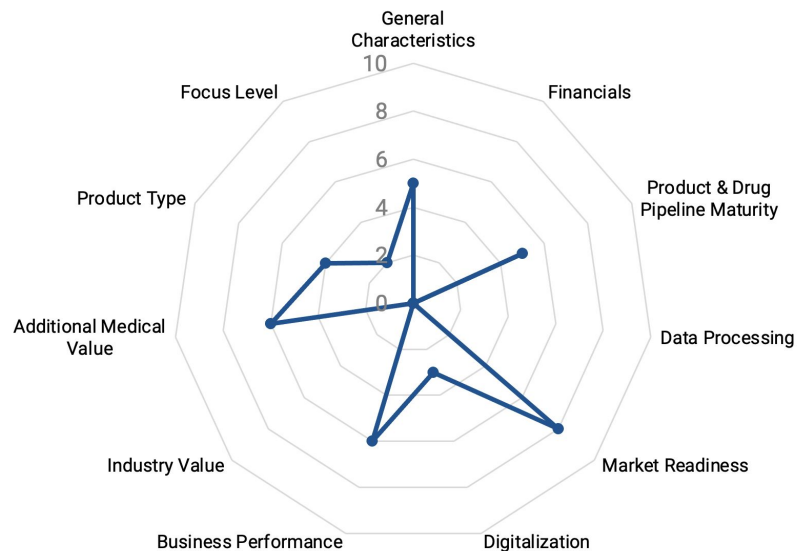


Description

Formatk Systems is a global developer and manufacturer of technologically driven and market-oriented devices for the medical aesthetic market. Founded in 2008 by a group of industry veterans, Formatk Systems has and continues to introduce a sophisticated product range that empowers professional practitioners and sets a new standard of quality, innovation, and safety. All of Formatk's products are designed, developed, and manufactured in our state-of-the-art laboratories and subjected to the most rigorous quality assurance. Our clinical procedures are all based on extensive clinical research.

Website:	https://forma-tk.com
Technology:	Facial Skin and Hair, Cosmetic Surgery on the Face
Number of Employees:	11-50
Founded in:	2008
Based in:	Hefa, Israel
Founders:	Ilan Toldesano
Total Funding Amount (£):	N/A
Investors:	N/A

Source: Company's website

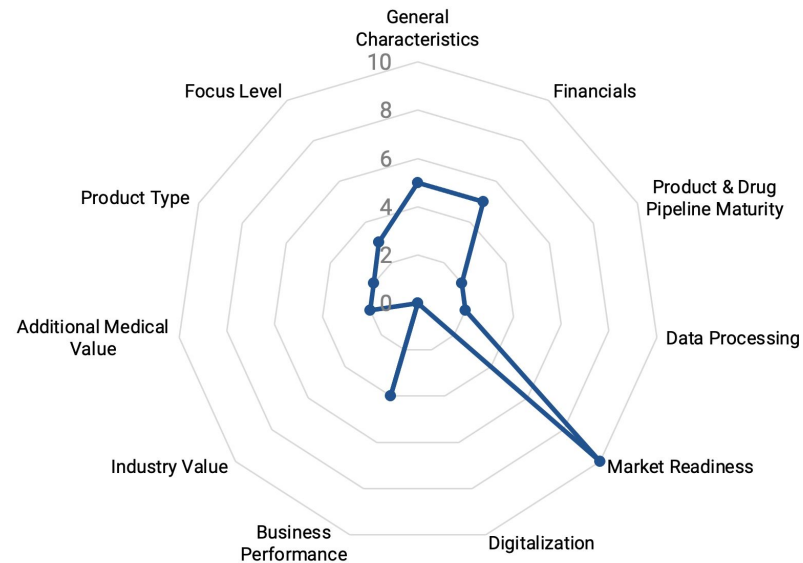


Description

Sisram Medical is a global innovator of laser, light-based, radiofrequency, and ultrasound solutions for the aesthetic and surgical markets. Sisram Medical has been at the forefront of multi-technology systems, revolutionizing existing treatment methods and working to serve the varied and growing needs of both patients and practitioners worldwide. With offices, R&D, and manufacturing facilities on three continents and distributors around the world, Alma's mission is to provide modular, cost-effective, and high-performance systems based on the latest clinical research and cutting-edge technology.

Website:	https://www.sisram-medical.com
Technology:	Facial Skin and Hair, Cosmetic Surgery on the Face
Number of Employees:	501-1000
Founded in:	2001
Based in:	Hefa, Israel
Founders:	N/A
Total Funding Amount (£):	N/A
Investors:	N/A

Source: Company's website



VenusTreatments

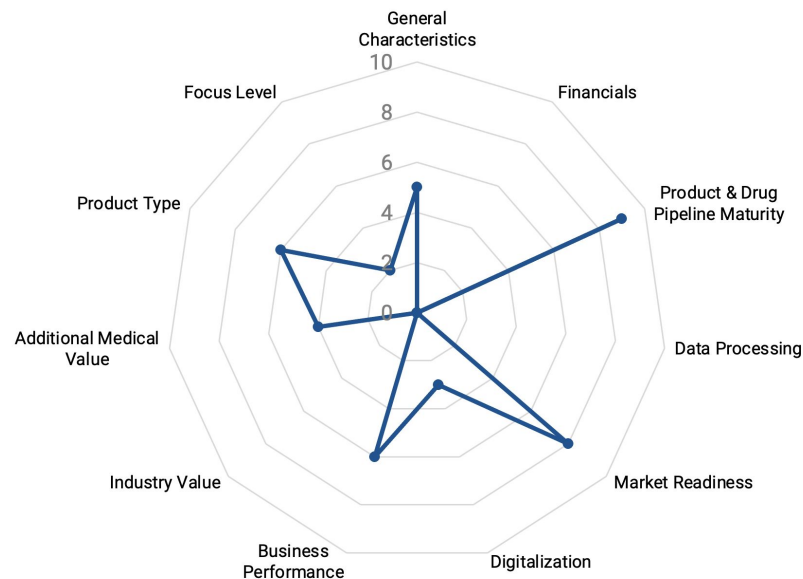


Description

VenusTreatments.com helps certified treatment providers around the globe who offer the most advanced, non-surgical solutions for today's most common aesthetic concerns – brought to the client by Venus Concept, the leading manufacturer of medical aesthetic devices. Whether the client is interested in skin resurfacing treatments to improve skin texture or looking to remove unwanted hair, Venus Treatments has a solution to help the client meet their goals.

Website:	https://www.venustreatments.com
Technology:	Facial Skin and Hair, Cosmetic Surgery on the Face
Number of Employees:	1001-5000
Founded in:	2014
Based in:	Toronto, Canada
Founders:	N/A
Total Funding Amount (£):	N/A
Investors:	N/A

Source: Company's website



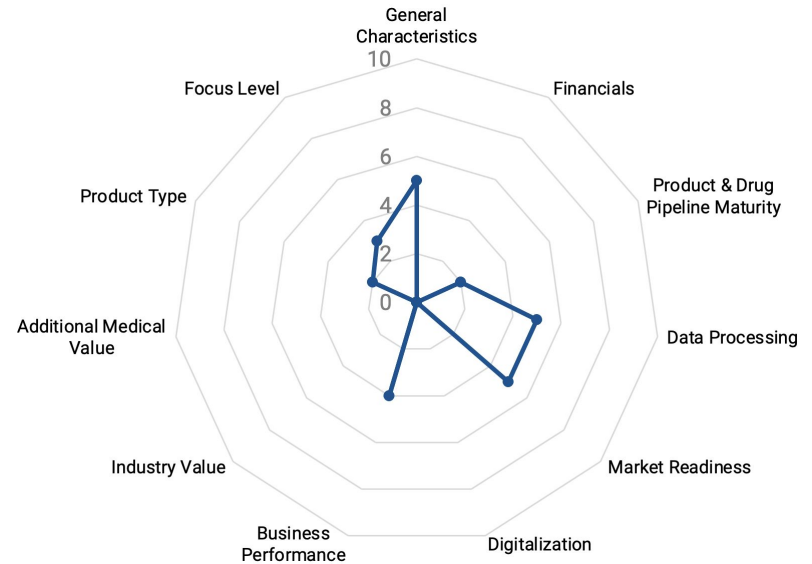
Description

Since its establishment in 1970, Daeyang Medical has been reborn through ongoing technological development and continuous growth in a rapidly changing global market environment.

For the next 50 years, Daeyang Medical will continue developing safe and effective professional medical equipment using various core technologies that have been clinically proven for the beautiful and healthy life of humankind.

Website:	http://www.daeyangmed.com
Technology:	Facial Skin and Hair, Cosmetic Surgery on the Face
Number of Employees:	100-500
Founded in:	1970
Based in:	Gangwon-do, Korea
Founders:	N/A
Total Funding Amount (£):	N/A
Investors:	N/A

Source: Company's website

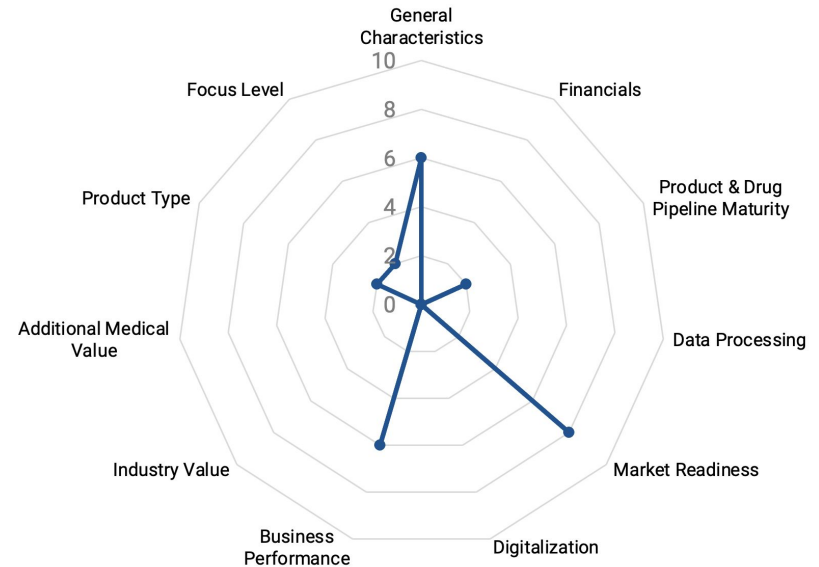


Description

The mission is to empower people and their health goals. Wellabs develop, market, and manufacture the blends of herbs, vitamins, and minerals. They are each formulated to promote the best in your health. Wellabs makes products without any artificial ingredients, extra fillers, or binders. The team only uses the purest and most potent natural ingredients to provide comprehensive support for customers of all ages. Wellabs offers family bundles with the different set of products suitable for the whole family.

Website:	https://shopwellabs.com
Technology:	Facial Skin and Hair, Cosmetic Surgery on the Face
Number of Employees:	1-10
Founded in:	2019
Based in:	Alpharetta, United States
Founders:	N/A
Total Funding Amount (£):	N/A
Investors:	N/A

Source: Company's website

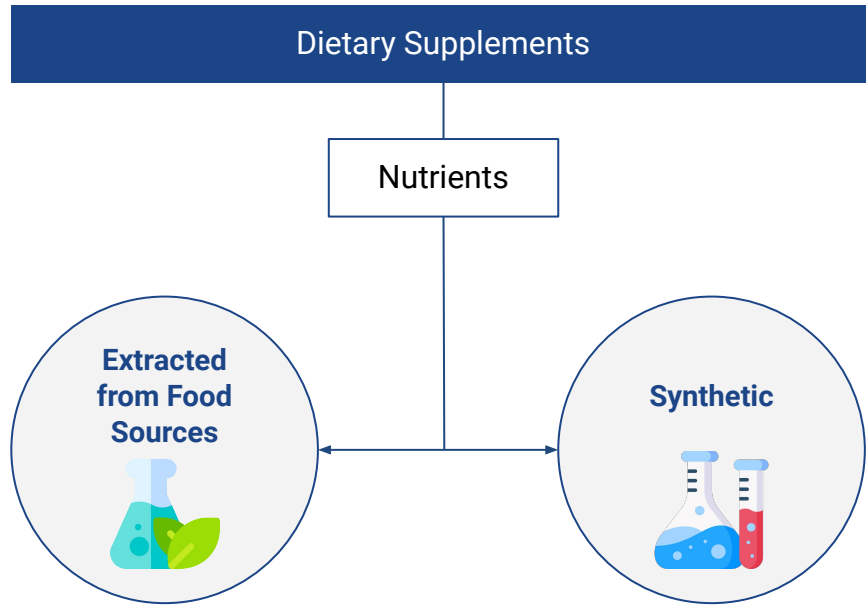


Dietary Supplements



Dietary Supplements: Introduction

Being of plant, animal, or mineral origin, dietary supplements contain vitamins, micro- and macroelements, amino acids, hyaluronic acid, collagen, and other compounds necessary for the proper functioning of the body. Thus, dietary supplements are one of the components of the **beauty industry**.



Nowadays, beautiful skin, shiny hair, strong nails, and white teeth almost everyone associates with **youth, naturalness, health**, and a **caring attitude to oneself**. Achieving that requires not only regular **physical activity, proper nutrition**, and **getting rid of bad habits**, but also using **cosmeceuticals** and **dietary supplements** with a proven track record of effectiveness.

It's been found that combining particular cosmetic procedures with the intake of nutricosmetics has a more pronounced and lasting effect on hair, nails, and skin.

Nutricosmetics

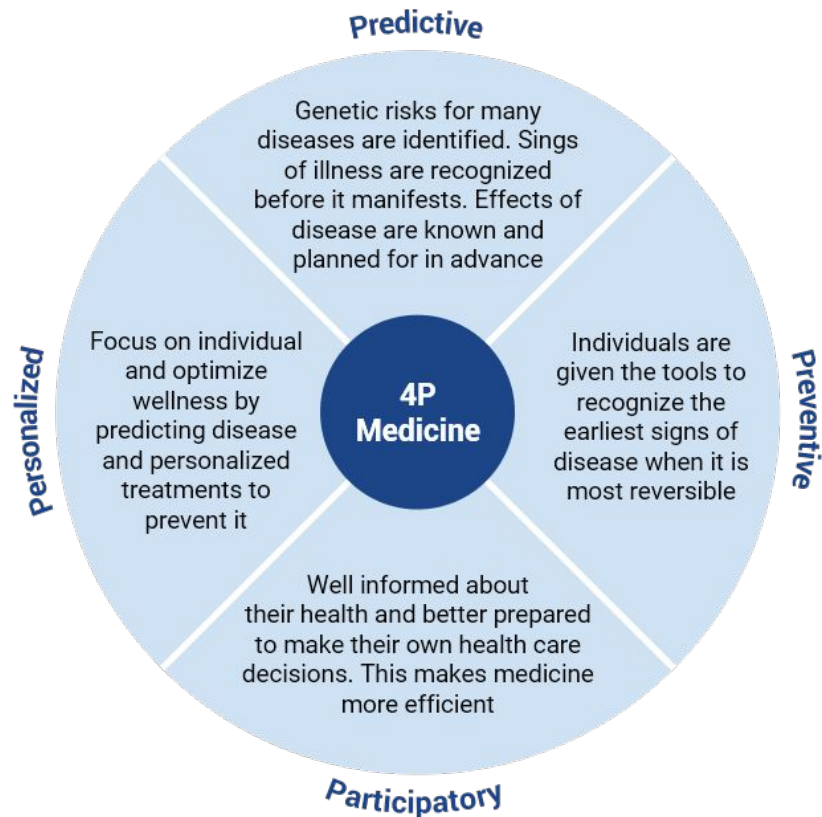
Nutricosmetics refers to dietary supplements designed to improve the condition of the skin, hair, and nails. Unlike medicines and cosmeceuticals, they contain low dosages of active ingredients and can be taken orally. As a rule, the substances included in dietary supplements are well studied and have a proven track record of effectiveness.

At the intersection point between cosmetology and pharmacology, **cosmeceuticals** (medicinal cosmetics) and **nutricosmetics** combine the latest scientific advances and principles of **P4-medicine**.

Groups of Nutricosmetic Drugs

- drugs for maintaining the elasticity and tone of the skin, achieving a more oval face shape, and prevention of the appearance of signs of chrono- and photoaging;
- drugs for improving the condition and appearance of hair and nails;
- drugs for safe tanning;
- drugs for normalizing metabolism and weight loss.

Source: Gao Feng analysis, Providence St. Joseph Health



Dietary Supplements: How Much Collagen Is Enough?

Collagen as the main structural component of connective tissue, from which our **skin, blood vessels, muscles, and internal organs** are made, is one of the most important proteins of the human body. In fact, 25 to 30% of all protein molecules in our body are made up of collagen.

Collagen Supplements Effects

Smooth and toned skin

Rapid skin renewal, healing of scratches, cracks, and other injuries

Acceleration of nail growth by 12%, reduction of fragility by 42%, in 80% of cases the nails become smoother, smoother, shinier

High efficiency and absence of undesirable reactions

Indications for Taking Collagen

Age: the older we get, the less collagen our body produces

Unbalanced nutrition and restrictive diets: insufficient intake of food containing amino acids reduces collagen production

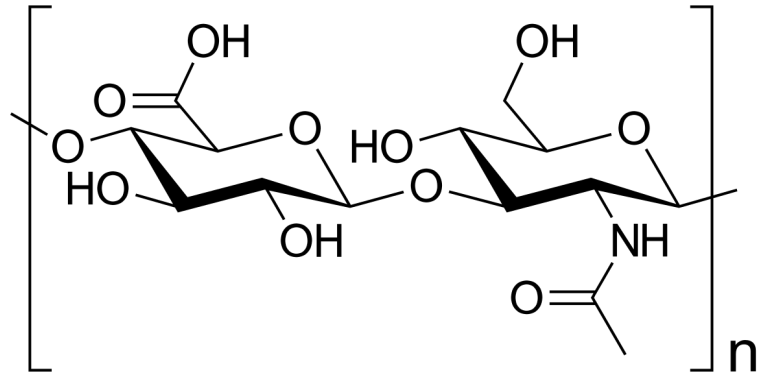
Lack of antioxidants: UV radiation and other damaging factors cause collagen molecules to lose their properties

How Much Collagen Is Enough?

The human body is constantly renewing itself, losing 2 grams of skin and several thousand hair shafts per day. Our nails constantly grow, while the mucous membrane of the gastrointestinal tract and the respiratory system continuously regenerates itself. To compensate for that, one should start with a minimum dose of **2.5 grams of collagen per day**. Individuals whose daily intake of proteins is limited should exercise caution.

Dietary Supplements: Hyaluronic Acid and Photoaging

Found in all tissues of the body, **hyaluronic acid** is a high molecular weight **polysaccharide** with complex chemical formula and spatial molecular structure. What makes it special is its **ability to retain water in body tissues**. One of its major drawbacks is its inverse dependence on the intensity of ultraviolet radiation (i.e., hyaluronic acid molecules cease to be produced in a sunburn area), which is one of the primary causes of **photoaging**.



Chemical Formula of Hyaluronic Acid

With age, the production of hyaluronic acid decreases. In older people, this polysaccharide completely disappears from the epidermis. Also, with age, the ability of hyaluronic acid molecules to retain water decreases.

Hyaluronic Acid-based Supplements

Taking hyaluronic acid-based supplements causes a significant increase in the **elasticity** and **hydration** of the skin. It helps achieve the **skin-smoothing effect** and decrease the depth of **wrinkles**.

Simultaneous intake of hyaluronic acid and collagen increases the **elasticity, density, and moisturization** of the **skin**. It also reduces the severity of crow's feet in the area near the eyelids. Combining hyaluronic acid with antioxidants, amino acids, and minerals significantly increases the tone and hydration of the skin and improves the appearance of elderly patients.

Dietary Supplements: Types

There's no generally accepted classification of active ingredients in dietary supplements. Accordingly, we suggest to look at one of the most common classifications.

Types of Dietary Supplements

MINERALS	VITAMINS	FATTY ACIDS	PROTEINS & AMINO ACIDS
Iron, copper, phosphorus, zinc, manganese, silicon, and calcium	Vitamins A (retinol), E, C (ascorbic acid), and B	Omega-3, and Omega-6	Collagen, and elastin
PLANT EXTRACTS	ANTIOXIDANTS	OTHER COMPOUNDS	
Field horsetail, and aloe	Lycopene, and coenzyme Q10	Hyaluronic acid, and CBD oil.	

Description

Using only the best ingredients to make the product, Sparkle strives to provide the finest possible formulation for the ultimate efficacy and benefits for your skin, hair, and nails. Yu Ming and Derek have created Sparkle, a supplement brand with an emphasis on scientifically evidenced natural approaches for beauty-from-within and wellness.

The main distinguishing feature of the brand is sustainability. Sparkle has made a commitment to plastic reductions in all manufactured products.

Website: <https://lovesparkle.life>

Technology: Dietary Supplements

Number of Employees: 1-10

Founded in: 2010

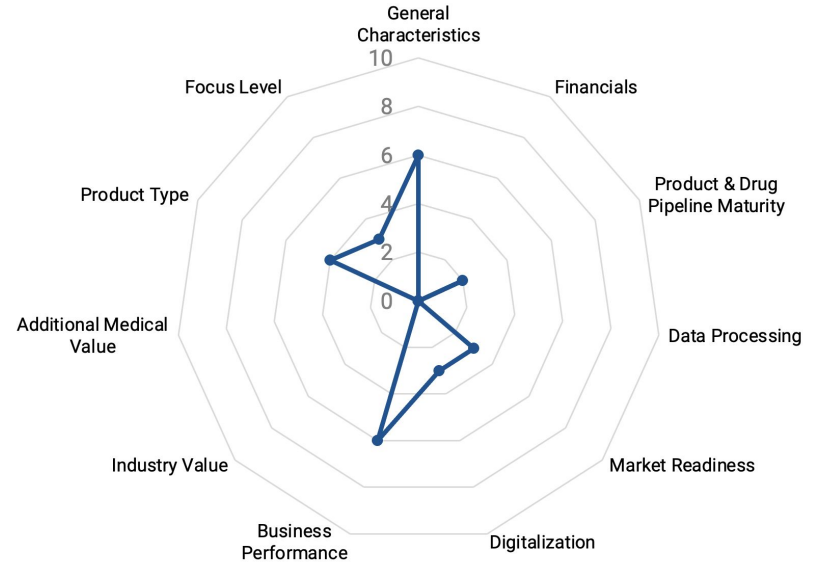
Based in: New York, United States

Founders: Yu Ming, Derek Ming

Total Funding Amount (£): N/A

Investors: N/A

Source: Company's website



Description

XYMOGEN formulas have been used and trusted by thousands of practitioners and patients nationwide for over 20 years. XYMOGEN is diligent about finding the best raw materials, and our exacting standards of quality, purity, and efficacy are driving more practitioners and patients every day.

XYMOGEN is currently distributing in Canada, South Korea, South Africa, China, Taiwan, Singapore, Australia, New Zealand, Mexico, and Indonesia – and we are looking to develop markets in Iran, Saudi Arabia, Pakistan, and throughout Europe.

Website: <https://www.xymogen.com>

Technology: Dietary Supplements

Number of Employees: 501-100

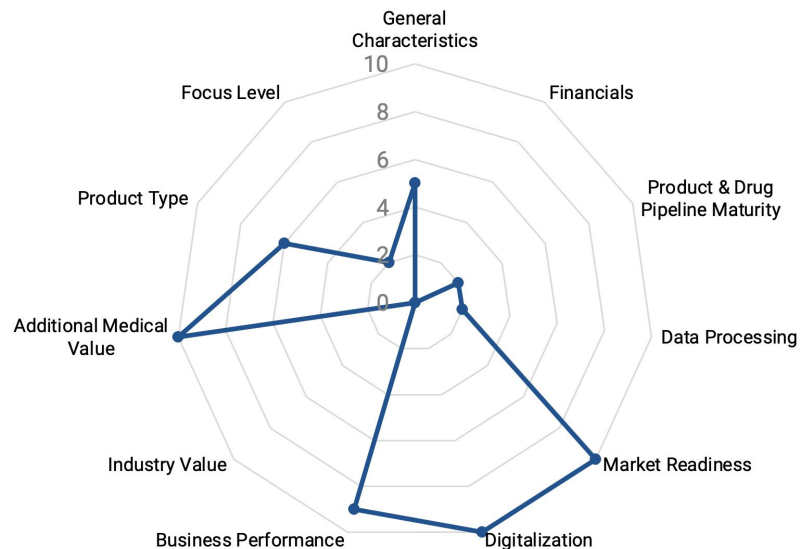
Founded in: 2003

Based in: Orlando, United States

Founders: Brian Blackburn

Total Funding Amount (£): N/A

Investors: N/A



Source: Company's website



Description

Ayurveda, the teachings of the Science and Wisdom of Life, is the root of all Grocare provides. In the 1950s, the company began the research – formulating and testing the pure, potent herb formulations that Ayurveda advocates. Grocare draws inspiration from the founding father of Late Vaidya – Chandra Prakash, an Ayurvedic physician & researcher based in British India, who served tirelessly against Leprosy in the initial period of his career. Grocare India uses an ayurvedic formulation that reduces the triglyceride content of adipocytes & reduces inflammation effectively.

Website: <https://in.grocare.com>

Technology: Dietary Supplements

Number of Employees: 1-10

Founded in: 1948

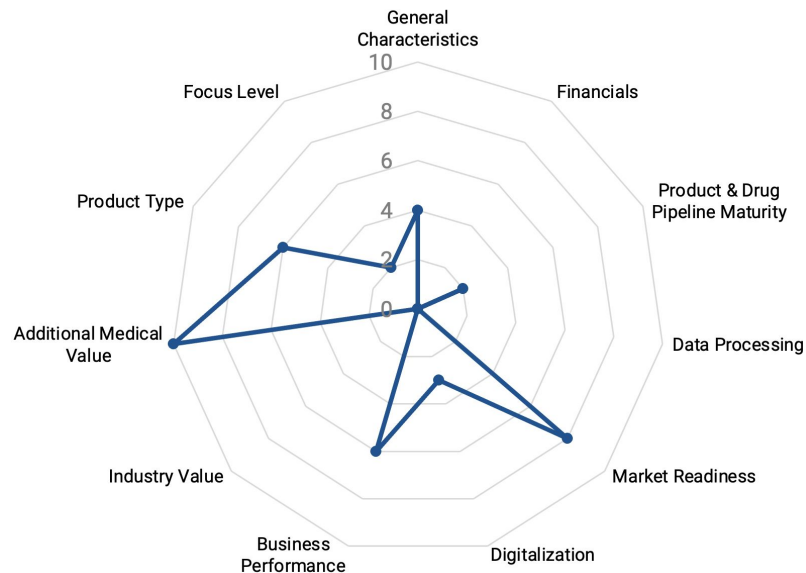
Based in: Pune, India

Founders: N/A

Total Funding Amount (£): N/A

Investors: N/A

Source: Company's website



Description

Klaire Labs provides clean, pharmaceutical grade formulations that are the model for nutritional supplements. The medical community took notice, and Klaire Labs became the standard bearer of purity, potency, and performance. Guided by a dedicated team of highly skilled professionals, the Klaire Labs executive team represents decades of scientific, manufacturing, sales, and marketing excellence. The team shares a passion for changing the way people consider natural healthcare, a holistic dedication to premium, professional grade quality, and profound insight into the nutritional supplement category.

Website: <https://www.klaire.com>

Technology: Dietary Supplements

Number of Employees: 1-10

Founded in: 1969

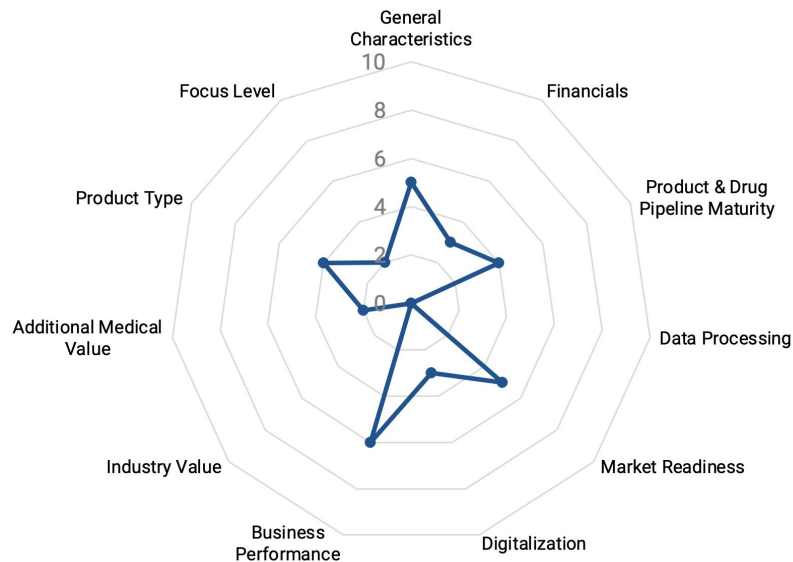
Based in: United States

Founders: Claire Flair

Total Funding Amount (£): N/A

Investors: N/A

Source: Company's website



Description

For more than 130 years, Abbott puts science and innovation to work – to create more possibilities for more people through the power of health. Company adapts and respond quickly to changes in the world around to deliver better solutions to help people live their best lives. Abbott understands that the first step to living best life is good health. Everything Abbott makes is designed to help you do just that. That is the commitment to building life-changing technologies that keep your heart healthy, nourish your body at every stage of life, help you feel and move better, and bring you information, medicines and breakthroughs to manage client health.

Website: <https://www.abbott.com>

Technology: Dietary Supplements

Number of Employees: 1001-5000

Founded in: 1944

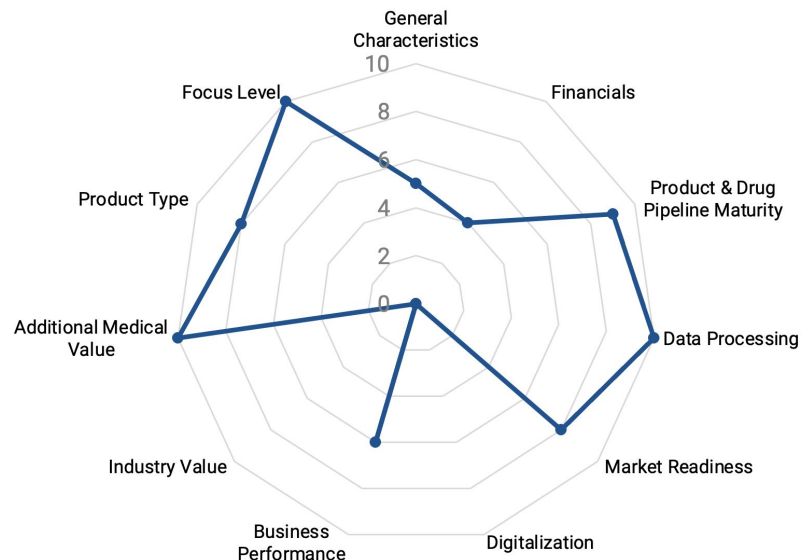
Based in: Illinois, United States

Founders: Wallace Abbott

Total Funding Amount (£): N/A

Investors: Alere, Evalve, Ovalis, Bigfoot Biomedical

Source: Company's website

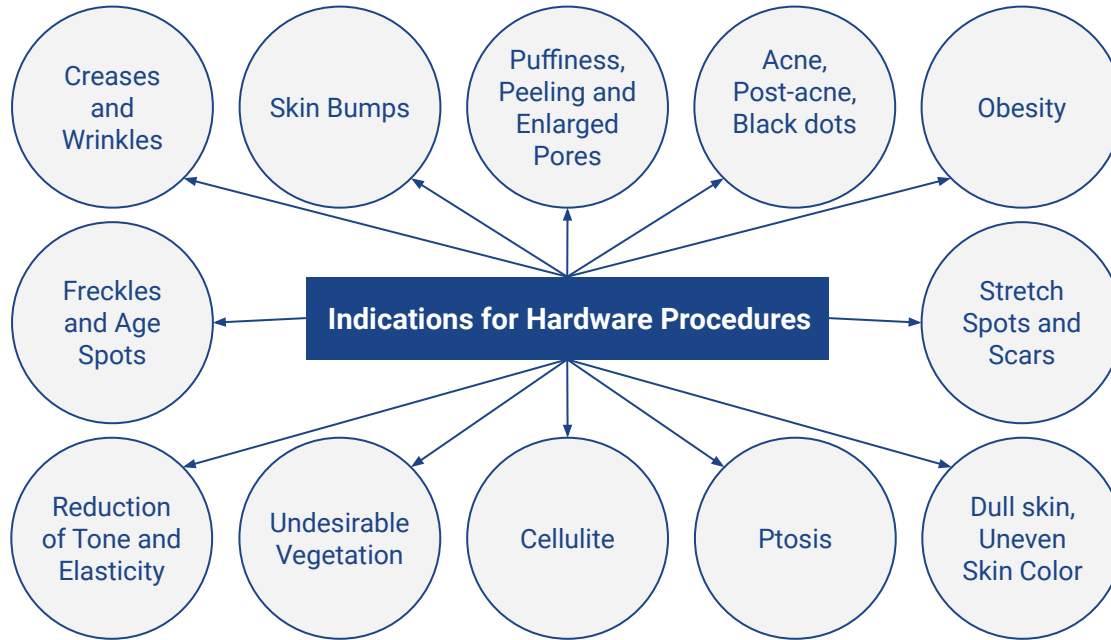


Apparatus Cosmetology



Apparatus Cosmetology: Hardware Cosmetology

Hardware cosmetology involves treating problem areas of the face and body with physiotherapy equipment. Safety and effectiveness of its techniques depends on the ability of a device to **penetrate the deep layers of the skin**.



Hardware Cosmetology Relies on:

Electricity

Laser Radiation

Ultrasound

Low or High Blood Pressure

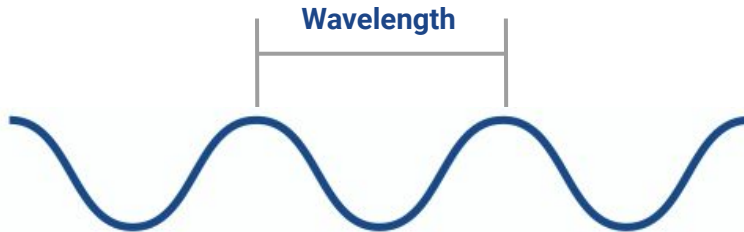
Light beam (Laser Techniques, Infrared Phototherapy)

Abrasive Particles (Diamond Microdermabrasion, Brushing)

Low Temperatures (Cryopilling)

Apparatus Cosmetology: Laser Cosmetology

Apart from slowing down skin aging through skin regeneration, in cosmetology, lasers with different wavelengths are used to remove **acne**, **blue spots**, **wrinkles** (mimic or age-related), and **scars** (regardless of their origin and age); lasers also used for sagging facial skin, decreased **tone**, **bags** under the eyes, **hyperpigmentation** of the face and body, **dark circles** under the eyes, low-quality **tattoos**, enlarged **pores**, and **excess weight**.

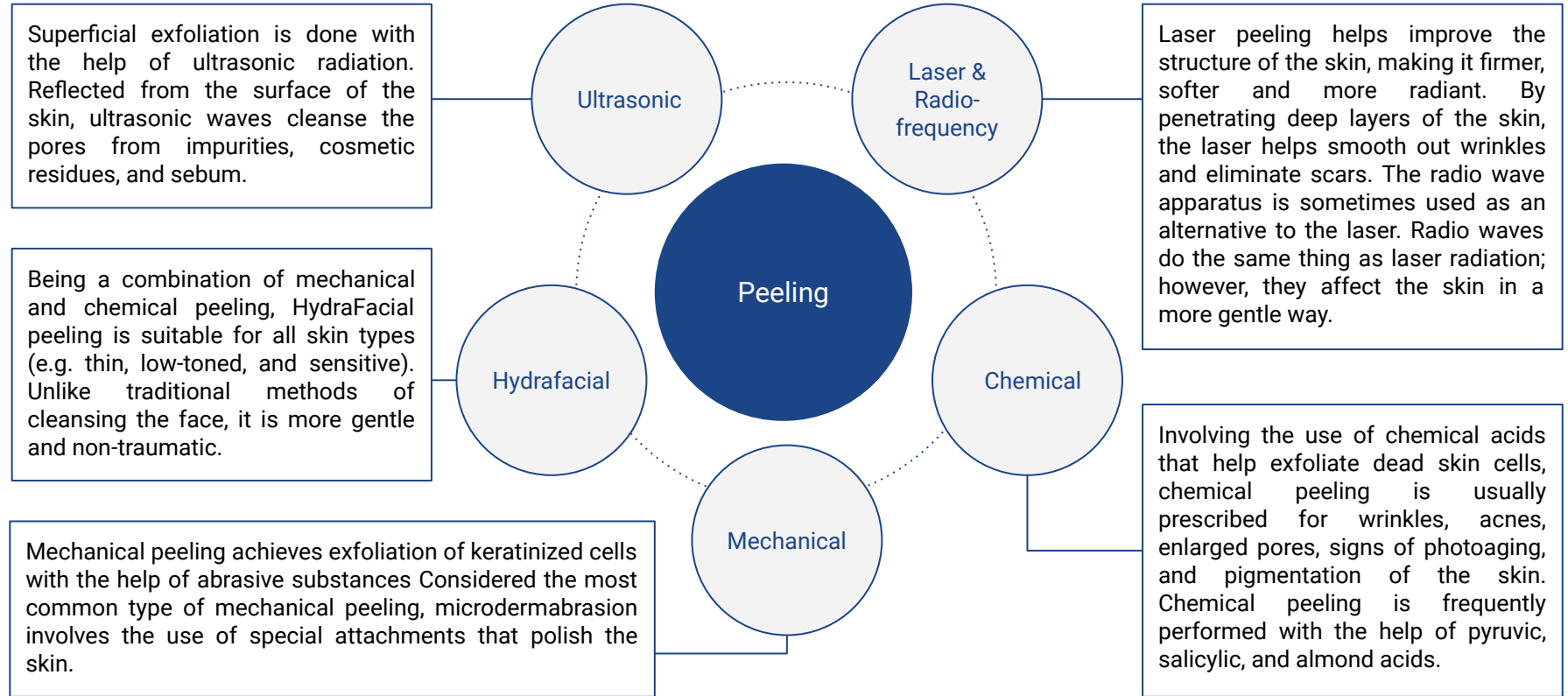


There are different types of lasers available nowadays, which is why choosing one requires taking into account the type of skin and problems experienced by the patient.

Examples of Lasers Applications for Cosmetic Purposes:

- **removal of tattoos** of any color;
- multilevel laser **rejuvenation** and photothermal **skin reconstruction**;
- **lifting** from the side of the oral mucosa;
- fractional **skin rejuvenation** and **improvement** of its **quality** (fractional denaturation of collagen fibers without heating and damage to surrounding tissues);
- laser treatment using a combined effect of 1064 nm and 2940 nm wavelengths to **correct body contours** and **tighten the skin** on any part of the body;
- specific **shielding effect**, i. e. formation of a flat wound channel, which accelerates the **healing** of **damaged tissue**).

Apparatus Cosmetology: Peeling



Source: Brigitte Kettner

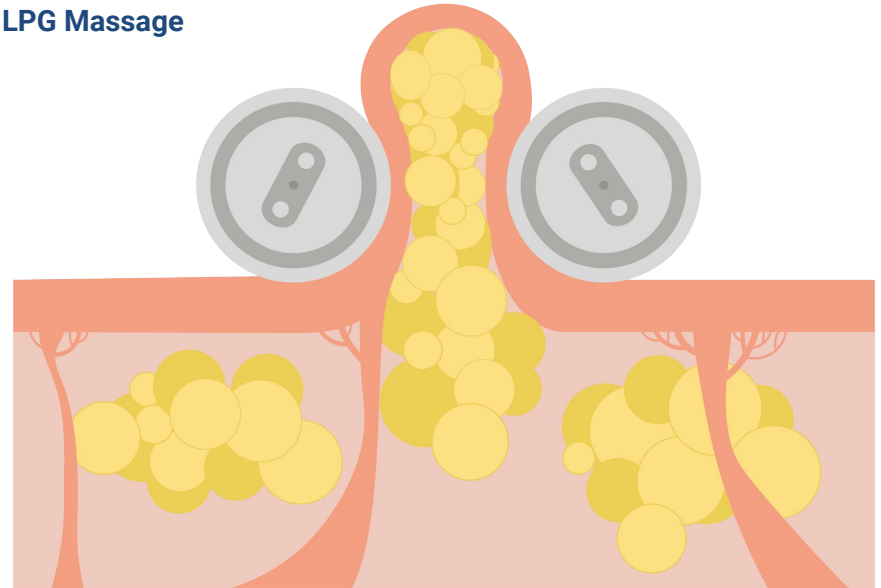
Apparatus Cosmetology: LPG Massage

Named after Louis Paul Gitel, a French engineer whose initials went into the abbreviation of its name, **LPG massage** involves the use of a special device with roller attachments. By gripping the skin at high speed, the attachments create **vacuum** and achieve a **suction effect**. Thanks to the combined effect of vacuum and suction, the **skin is tightened** and **body fat is destroyed**. Massage is carried out with a **special suit** designed to ensure the hygiene of the procedure and minimize unpleasant sensations.

LPG massage helps remove cellulite and fat deposits, tighten the skin, improve the body shape, eliminate back pain, treat the initial stages of varicose veins, relieve pain in the joints, remove keloid scars, and promote postpartum recovery. When performed on athletes, LPG massage helps relax muscle tension and reduces the risk of injury.

After only several procedures, the results of fat's breakdown become visible to the naked eye. Effective for both the face and body, LPG massage can be performed on patients of any gender and age.

LPG Massage



Apparatus Cosmetology: Microcurrent Therapy

- 1 Fibroblasts, which are involved in the production of collagen, hyaluronic acid, and elastin, are stimulated
- 2 Production of keratinocytes and melanocytes in the epidermis is significantly accelerated
- 3 Collagen deposition in adhesive tissues is reduced and improved functioning of inter-collagen fibers
- 4 Fibroblasts (which are involved in the production of collagen, hyaluronic acid, and elastin) are stimulated
- 5 Endorphins are produced
- 6 The functioning of the sebaceous glands is normalized
- 7 Metabolic processes are accelerated
- 8 Blood microcirculation is improved
- 9 The swelling of the skin is reduced

The **microcurrent therapy** implies body's exposure to modulated impulse currents of low strength (up to 1mA) and low voltage with different frequency characteristics. Thanks to that, a **therapeutic** and **cosmetic effect** is achieved.

In general cosmetology, the microcurrent therapy is applied to restore intracellular metabolism, supply cells with nutrients and oxygen, and remove waste products from cells. In aesthetic cosmetology, it applied to rejuvenate and restore tissues.

Microcurrent Therapies are classified:

By Electrodes

Metal electrodes of various shapes can be used for exposure to the face, neck, and skin near the eyes. Non-stationary electrodes are also widely used for these areas.

By Current Characteristics

In the microcurrent therapy, bipolar and monopolar currents can be used.

Description

Cutera, develops new solutions that give medical aesthetic professionals the power to adapt, evolve, and stay at the forefront of the field so that they can deliver true patient satisfaction. Ideating, exploring, designing, testing, and developing new solutions is the foundation of our process that has created truly one-of-a-kind devices. In 1998, veteran laser and optical engineers founded Cutera – and that original spirit of innovation drives the advancements we pioneer in medical aesthetic practices globally. Since our founding, we’ve been ideating, exploring, designing, testing and developing new solutions.

Website: <http://www.cutera.com>

Technology: Apparatus Cosmetology

Number of Employees: 251-500

Founded in: 1998

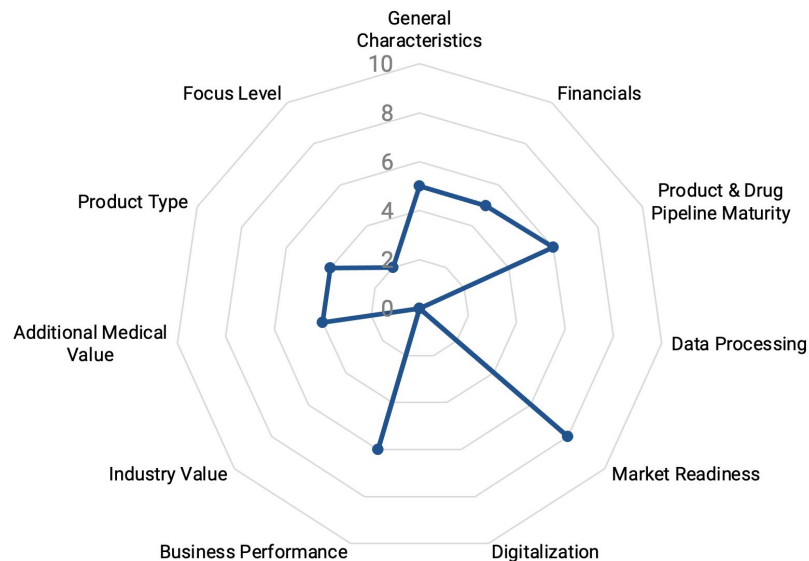
Based in: California, United States

Founders: N/A

Total Funding Amount (£): N/A

Investors: N/A

Source: Company's website



Description

Cynosure is a developer and manufacturer of a broad array of light-based aesthetic and medical treatment systems. Their products are used to provide a diverse range of treatment applications such as hair removal, skin rejuvenation, and scar reduction, as well as the treatment of vascular lesions. Management focuses on reducing production costs and increasing the speed at which they could bring new products to market.

Cynocure apparatus contouring treatments are a one-step solution to the natural-looking, slimmer appearance. The treatments permanently remove targeted fat cells under the chin without surgery or downtime. Treatments are fast, easy, and allows to return to normal activities immediately

Website: <https://www.cynosure.com>

Technology: Apparatus Cosmetology

Number of Employees: 251-500

Founded in: 2000

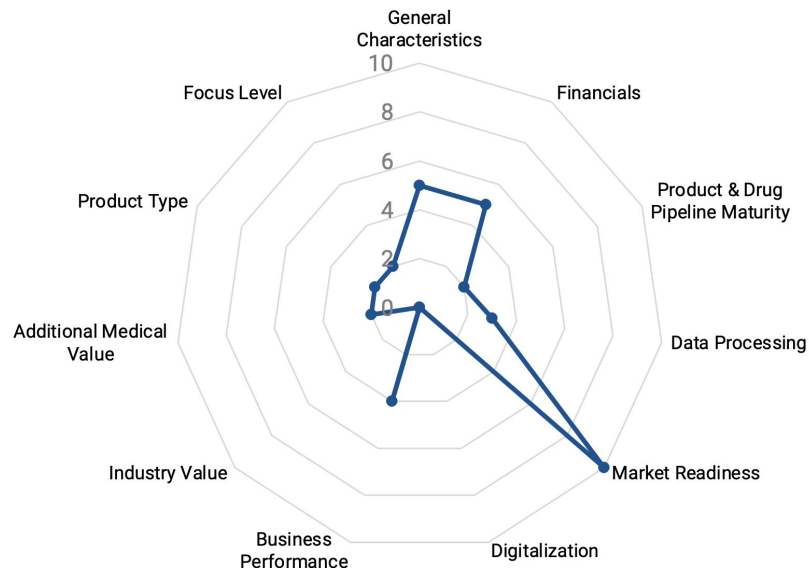
Based in: Manchester, United Kingdom

Founders: N/A

Total Funding Amount (£): N/A

Investors: CD&R LLP

Source: Company's website

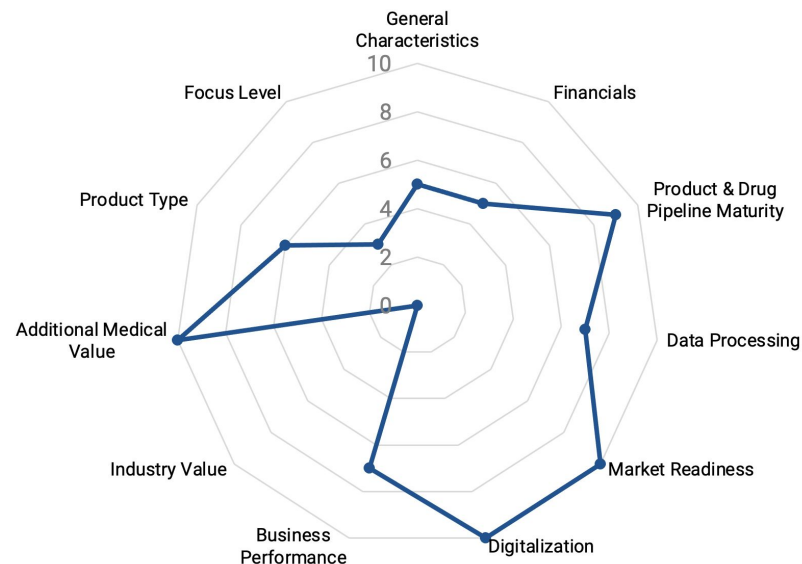


Description

El.En. Spa is one of the most important global players in the laser world providing industrial, medical and conservation laser solutions. Driven by constant research and development, El.En. Spa is committed to producing advanced laser devices, excellent in terms of performance, value for money, reliability, respect for the environment and post-sale service. El.En. devices are marketed in over 80 countries through a network counting over 80 distributors worldwide, including direct sales subsidiaries in France, Germany, Japan and the USA covering the territories with a direct sales reps network. Company excellence stems from the pervasive experience gained through over thirty years of intense R&D activity: since 1981 El.En. helped thousands of health professionals to take care of their patients. The quality and technological innovation place our brands on top of the medical trademarks, differentiating our offer in the international market.

Website:	https://elengroup.com
Technology:	Apparatus Cosmetology
Number of Employees:	1001-5000
Founded in:	1981
Based in:	Calenzano, Italy
Founders:	N/A
Total Funding Amount (£):	N/A
Investors:	N/A

Source: Company's website



Description

Idha Skin Clinic is dedicated to restoring health and natural beauty to your skin. Our team includes Consultant Dermatologist who is specialized in treating unwanted hair, brown spots, skin lightening, pigmentation reduction, wrinkles, sagging skin, facial contouring, acne, pores, scars removal, rosacea and hair loss treatments. Idha offers permanent laser hair removal, acne scar removal, laser skin resurfacing, skin lightening treatments skin rejuvenation, skin tightening treatments and hair fall reduction. Experienced medical doctors and knowledgeable medical aesthetic staff will analyse individual skin conditions and offer the most effective and safest skin care solutions that will not only improve your appearance but also boost client confidence.

Website: <https://www.idhaclinic.com>

Technology: Apparatus Cosmetology

Number of Employees: 11-50

Founded in: 2018

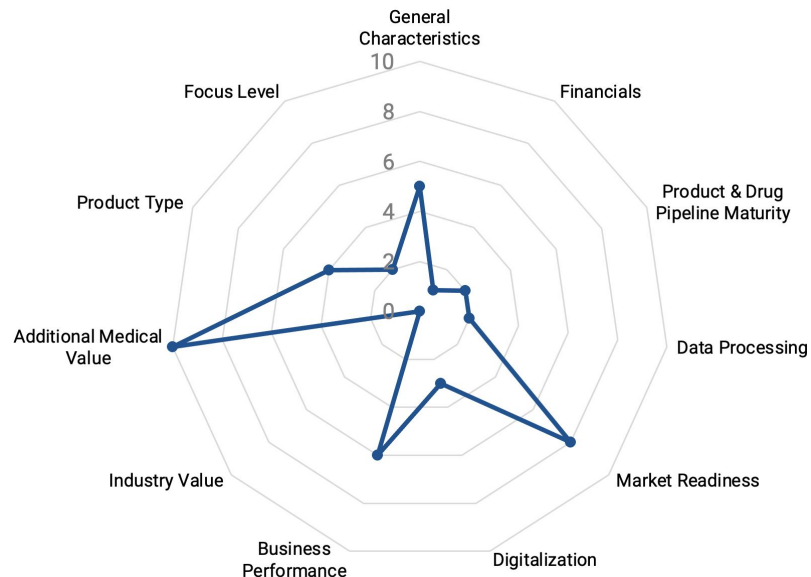
Based in: Bangalor, India

Founders: N/A

Total Funding Amount (£): N/A

Investors: N/A

Source: Company's website



Description

The GMT Beauty is designed to give clients the most effective elements from nature delivered by the latest technology, to activate the body's natural healing on the cellular level. Every GMT Beauty product is designed so concentratedly that a drop of it will be enough. Conceived by women, all medical and scientific professionals, to be safe and effective, GMT Beauty products are based on years of treating real people and on a commitment to understand and utilize the best of emerging research. The GMT Beauty line is composed of pure, natural ingredients, thoroughly tested (never on animals), and is non-allergenic 100% natural ingredients. Over 20 years experience in skincare and aesthetic medicine and the most recent advances in biochemistry and technology.

Website: <https://gmtbeauty.com/en/>

Technology: Apparatus Cosmetology

Number of Employees: 11-50

Founded in: 2008

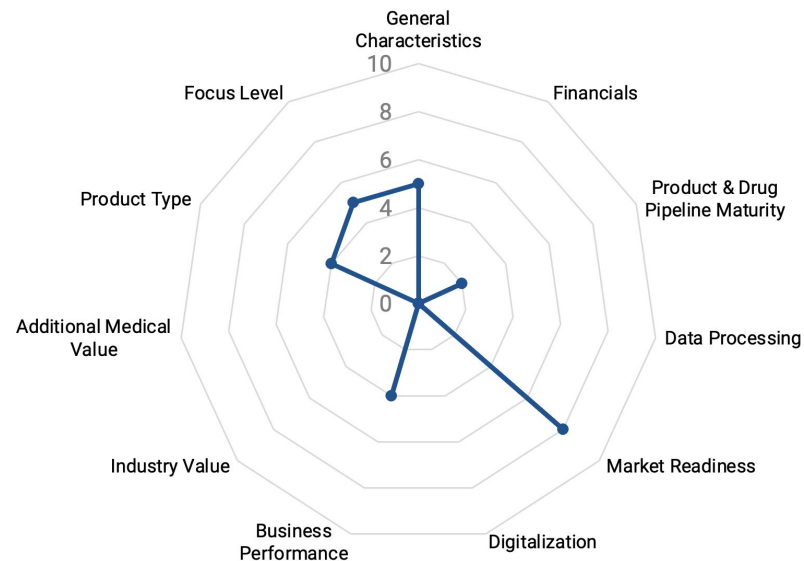
Based in: Riga, Latvia

Founders: N/A

Total Funding Amount (£): N/A

Investors: Expansion Capital

Source: Company's website



Advanced Procedures



Recommended Set of Advanced Procedures

Every day, the **human body is exposed to** all kinds of **stresses**. The increasingly rapid pace of life, bad habits, and poor ecology cause its defense system to frequently fail. Despite having natural recovery mechanisms, the human body is still being plagued by multiple problems, including weight gain, deterioration of skin condition, hair, loss of muscle mass, nervous disorders, and sleep disorders. And this ultimately affects our health and appearance.

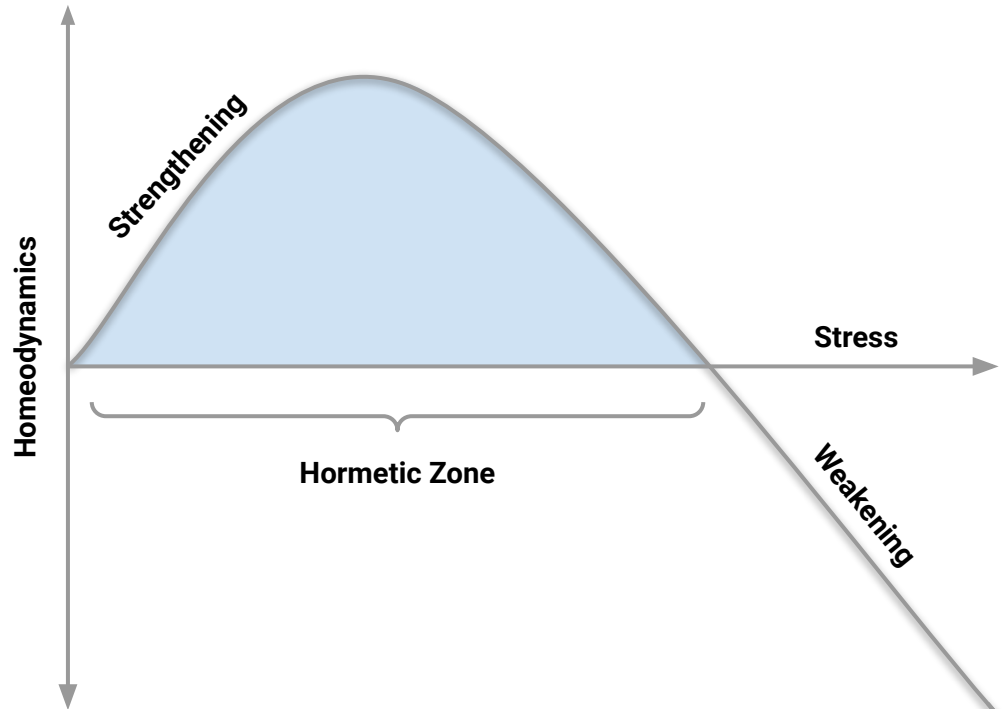
To effectively deal with these challenges, modern cosmetology has a whole arsenal of tools, including balanced nutrition, exercises, baths, saunas, thalassotherapy, balneotherapy, thermoregulated wraps, massages and other advanced cosmetology procedures. Their main function is to prevent disease and rejuvenate the body; hence, they can be used by perfectly healthy individuals.

Recommended Set of Advanced Procedures
Sauna
Cryosauna
Fitness
Wellness
Electrical Muscle Stimulation
Thalassotherapy
Intermittent Hypoxic Training
Bio Supplements

Source: Media overview

Recommended Set of Advanced Procedures

The Process of Hormesis



The stress experienced by the body may not not always be harmful. In fact, in small doses, it can have a pronounced therapeutic effect. By triggering the hormesis effect, calorie restriction, interval hypoxia, and low-dose radiation we can achieve a dramatic improvement in human health.

“Hormesis” stands for an adaptive response of the body to low doses of harmful factors (the so called **“light stress”**) that renders it and its cells more resistant to adverse environmental factors. By exposing the body to minor stresses, such as heat and cold, hypergravity, radiation, controlled fasting, hypoxia, and moderate exercise, hormesis can even prolong life. Under their influence, our body becomes more resistant to stress and begins to heal itself at the cellular level.

Recommended Set of Advanced Procedures

Combining various cosmetic procedures, the **SPA system attempts to achieve relaxation, healing and rejuvenation of the body**. “SPA” stands for “Sanus per Aquam”, which is Latin for “Health Through Water”. Today SPA is a complex of procedures involving the use of mineral, sea, and freshwater, as well as seaweed and salts, therapeutic mud and medicinal plants.

Acting through the skin, spa components trigger metabolic processes



Improve blood circulation



Accelerate the regeneration of skin cells



Increase the production of elastin and collagen



Remove toxins from the body



Improve overall well-being and vitality

Recommended Set of Advanced Procedures

SPA treatments are part of the popular **Wellness movement**. The word “wellness” is derived from “be well,” which means “wellness” or “well-being”. These two words are the essence of the whole concept of wellness. To be happy and successful, you need to feel good. **Wellness means not only physical but also emotional, intellectual, spiritual and social health and harmony.** However, to achieve this, one has to maintain a healthy diet, engage in daily physical activity, and give up bad habits. Only then will they be able to maintain the ideal body weight, improve the condition of their skin and ensure the overall rejuvenation of their body.

Wellness is a broad term that involves spa treatments, fitness, cosmetology, alpine air, and various therapeutic treatments. All these procedures are meant to have a complex effect, ensuring the elimination of excess fluid and toxins, cell regeneration, and the **slowing down of the aging of the skin and body.**



Recommended Set of Advanced Procedures

Being a piece of Wellness equipment, **SPA capsules** combine a range of cosmetic procedures **designed to have a beneficial effect on the body**. Used to restore and rejuvenate the body, a SPA capsule is a horizontal chamber in which a patient undergoes various procedures involving the use of light, infrared radiation, heat, water and steam.

The effect achieved with a SPA capsule can be enhanced by using various wraps and other cosmetic products. The result is oxygenation of skin cells, improvement of blood circulation and metabolism, and skin regeneration at the cellular level. A SPA capsule combines several procedures at once, including vibration massage, sauna, infrared sauna, ultrasonic stimulation, and aromatherapy.

There are **two types of SPA capsules** – dry and hydrofusion ones. Dry and hydrofusion capsules are manufactured by NeoQi and Esagono companies.

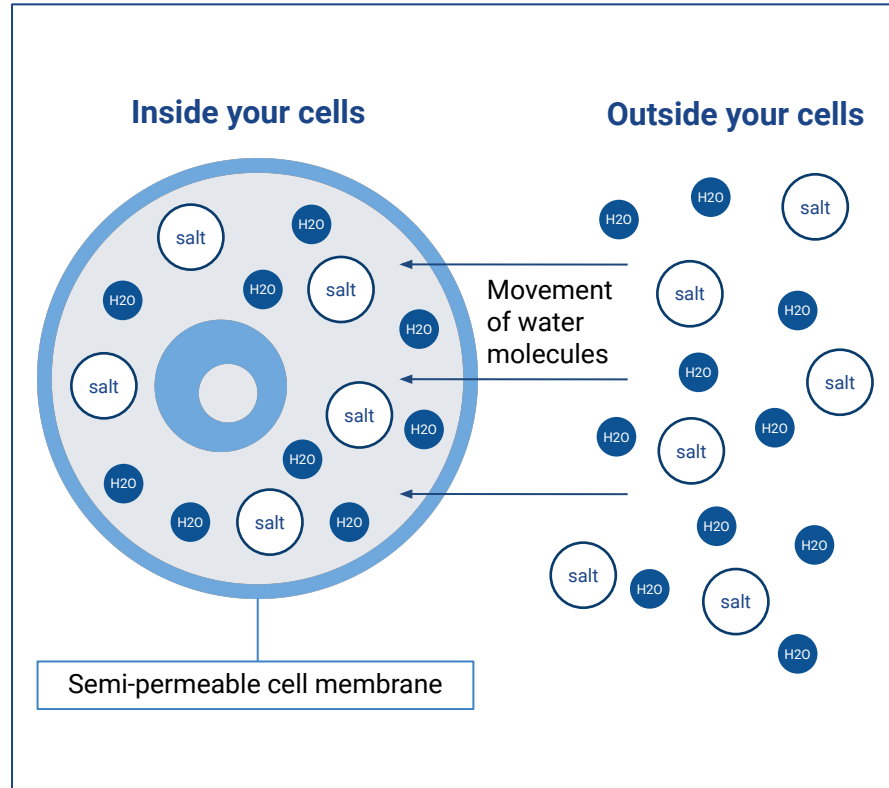
Dry SPA Capsule

In a dry SPA capsule, the body is exposed to warm and ionized air. The procedure also involves the use of oils, vibrating massage, chromotherapy, aromatherapy and music therapy. The most common procedure in the capsule is thermal energy therapy. The infrared light wave has effects on the subcutaneous fat tissue, burning the fat and removing it with sweat and up to 600 calories can be consumed. The temperature is up to 90°C that helps to improve lymph circulation, remove toxins and unnecessary water.

Hydrofusion SPA Capsule

Having a water reservoir, hydrofusion capsules are larger than dry ones. While in the capsule, the patient's skin is exposed to infrared radiation and hot steam up to a depth of 4 cm. This triggers lipolysis and causes the elimination of toxins from the body. Accompanied by phyto- and aromatherapy, the procedure may also involve the use of all kinds of wraps. In addition, a hydrofusion capsule can be used for having a shower, hydromassage, and various baths (e.g. fresh, aromatic, and bubble ones).

Recommended Set of Advanced Procedures



Thalassotherapy is a therapeutic method involving the use of the marine environment (sea water, algae, mud and other substances obtained from the sea) and the marine climate as a therapeutic agent.

The seawater **contains over 80 elements** necessary for the proper functioning of the human body. To maintain homeostasis in salty seawater, the body uses **osmotic absorption**, a process whereby water is osmotically driven from areas with a low concentration of salts to areas with a high concentration of salts through a semipermeable membrane.

It facilitates the **absorption of the elements** contained in the water through the skin thereby triggering the regenerative processes of the skin.

Recommended Set of Advanced Procedures

Thalassotherapy is indicated for menopause and many other conditions. One of the main indications for thalassotherapy is inability to relax, stress, depression, insomnia and overwork. When used in cosmetology, **thalassotherapy helps improve body tissue, combats sagging skin and cellulite and slows down skin aging.**

The algae contain plenty of useful substances, including vitamins A, B, C, E, F and K. Being rich in iron, calcium, proteins and minerals, they also have antibiotic, anticancer, antioxidant, and antiviral properties. **They can effectively slow down the process of skin aging.** Saturated with microdroplets of sea water, the sea air is rich in ozone and iodine, has antibiotic and relaxing properties and can stimulate the body's defenses.

The effect of thalassotherapy will be noticeable after at least 7 days of treatment.

Source: Media overview

Indications for Use are as Follows:

Chronic or acute processes of the musculoskeletal system (e.g. chronic rheumatism, osteoporosis and spinal pathology)

Circulatory disorders (mainly the pathology of the peripheral circulation)

Postoperative nye, trauma, respiratory pathology, neurological disorders or any pathology for which functional recovery is indicated

Respiratory system pathologies (e.g. asthma and pharyngitis)

Edema and psoriasis

Contraindications include:

Infectious

Cardiorespiratory Pathologies

Allergic

Hyperthyroidism

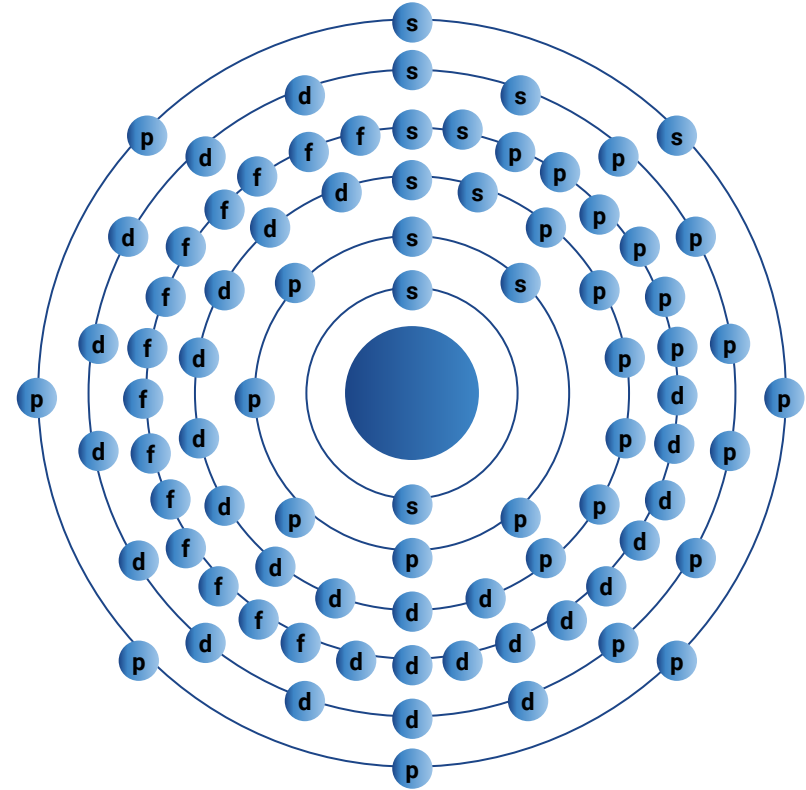
Recommended Set of Advanced Procedures

Radon therapy is used to treat skin and other diseases.

Found in nature in the form of a gas, radon is a radioactive element. When decaying, it emits alpha radiation, which is absorbed by water molecules. The decay products of radon have a hormesis effect on the human body.

Radon baths are used in a therapy involving the use of water obtained from natural radon sources or water artificially saturated with radon. Apart from radon baths, the therapy also involves the use of inhalation methods.

Having a **soothing effect on the skin**, radon baths speed up the recovery of nerve fibers and reduce inflammation. They also have a beneficial effect on the endocrine glands and help normalize sleep.



Recommended Set of Advanced Procedures

Popular radon resorts are: Boulder Basin (Montana, USA), Glenwood Springs (Colorado, USA), Bad Kreuznach and Baden Baden (Germany), Gastein (Austria), Alama de Aragon (Spain), Albano Terme and Bormio (Italy), Vichy and Dax (France), Baden (Switzerland), Belokurikha (Russia), and Heviz (Hungary).

Contraindications include:

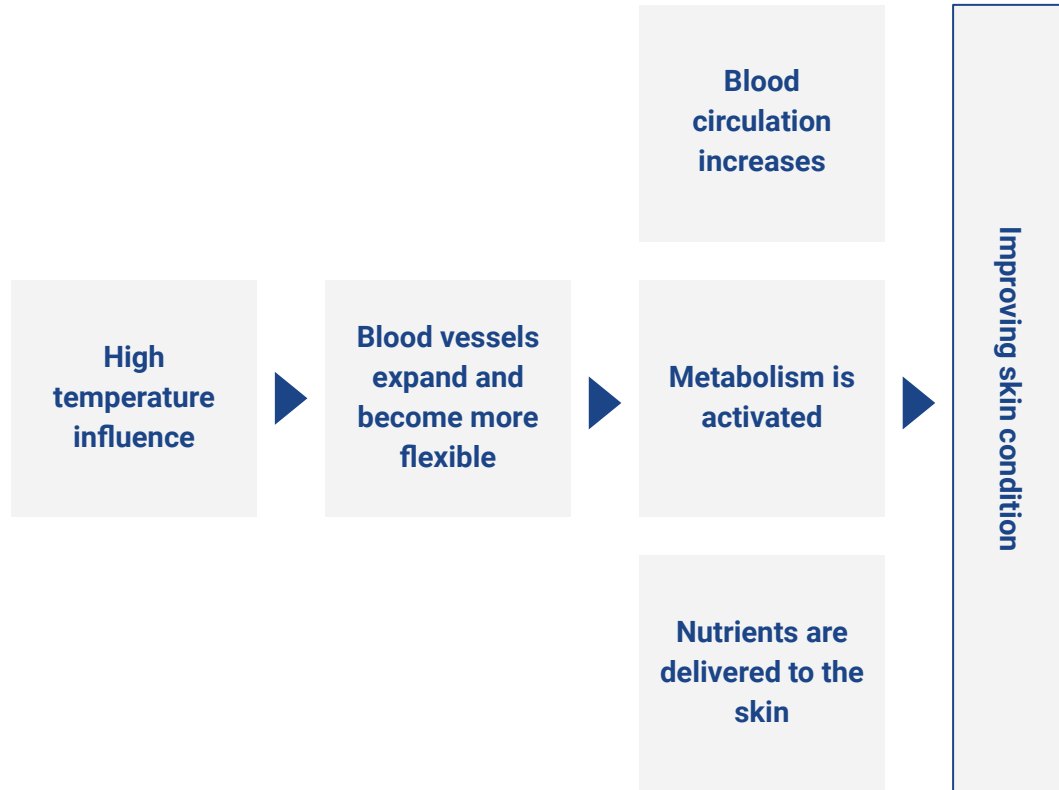
Radiation sickness	Benign neoplasms
Oncological diseases	Leukopenia
Neuroses	Tuberculosis
Heart diseases	Hyperthyroidism (increased production of thyroid hormones: triiodothyronine, thyroxine)
Epilepsy	An excessively low amount of estrogen in women

Indications for Use are as Follows:

Skin diseases as psoriasis and neurodermatitis	Metabolic disorders
Cardiovascular diseases	Osteochondrosis of the spine
Disorders of the musculoskeletal, central and peripheral nervous system	Rheumatoid arthritis
Gynecological diseases	Osteoarthritis
Diseases of the digestive system	Some endocrine disorders

Source: Media overview

Recommended Set of Advanced Procedures



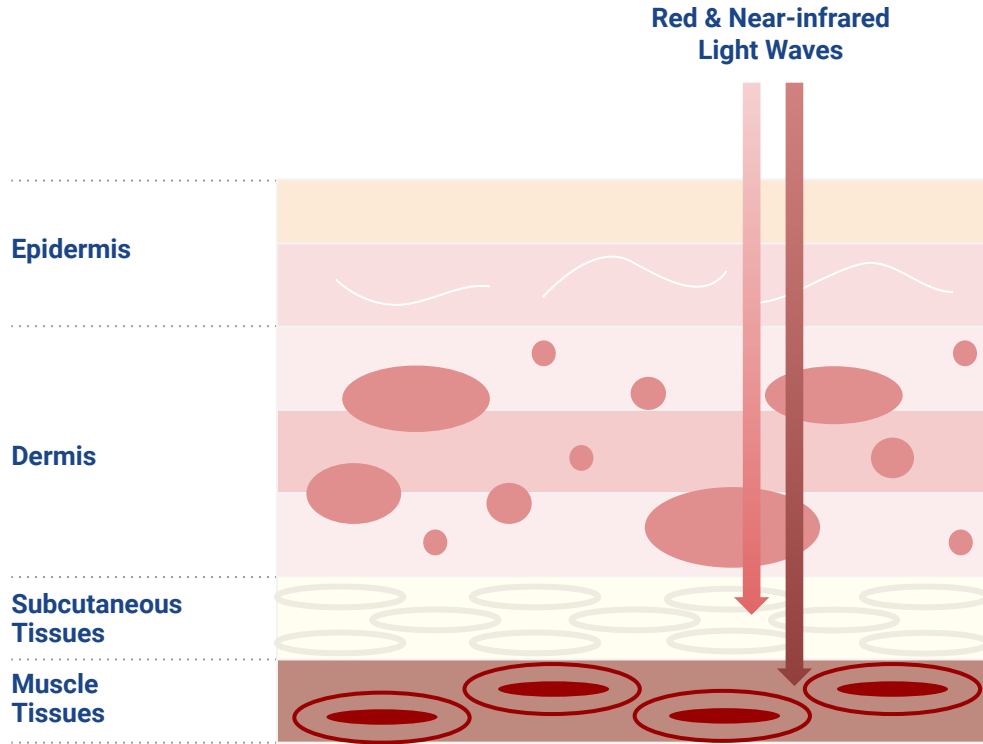
The sauna is one of the most popular skin care procedures. It involves **cleansing the body and skin with the help of high temperature**.

The benefits of the sauna include: acceleration of muscle recovery after physical exertion, elimination of toxins and harmful substances, increased muscle elasticity, alleviation of the symptoms of colds, improved functioning of the cardiovascular system, accelerated blood circulation in the skin, improved skin health, elimination of excess lactic acid and puffiness.

Contraindications include:

- hypertension,
- atherosclerosis,
- lung disease iyah,
- heart disease.

Recommended Set of Advanced Procedures



An infrared sauna is a type of sauna that uses infrared radiation to create heat. In a traditional sauna, heat is used to heat up the air and the body. An infrared sauna heats the body directly. It induces a response similar to moderate exercise, causing sweating and heart palpitations.

At lower temperatures, an **infrared sauna has a more pronounced therapeutic effect** than a conventional sauna. Thanks to that, it can be used by people for whom a conventional sauna is contraindicated.

No side effects of infrared saunas have been reported. Hence, it's a good replacement for conventional saunas. Infrared saunas are recommended by doctors, including for relieving muscle spasms and joint pain.

Recommended Set of Advanced Procedures

Used particularly often in cosmetology, **cryotherapy (cryomassage and sauna) helps saturate the skin with oxygen, triggers regeneration processes, and eliminates various cosmetic defects.**

Cryotherapy is a procedure involving exposure of the body to nitrogen. **The temperature in a cryosauna can drop as low as -190°C.** During the procedure, the brain begins to release endorphins that have analgesic, anti-inflammatory and relaxing effects. The benefits of cryotherapy are visible from the very first session.

Indications for use are as follows:

- anxiety and stress;
- skin problems;
- cellulite;
- neuropathic pain, such as migraine, osteoarthritis or fibromyalgia.

Cryosauna Benefits

Body Rejuvenation

Activation of Blood Circulation

Immune System Function Improvement

Central Nervous Systems Improvement

Stress Level Elimination

Skin Regeneration

Recommended Set of Advanced Procedures

Influence of Cryosauna on the Processes of Regeneration And Rejuvenation of Skin and Other Tissues



- A sudden drop in temperature stimulates the body's heat receptors.
- This forces the brain to send signals that activate the body's defense mechanisms and cause the heart and blood vessels to vigorously pump blood.
- Thanks to that, oxygen supply is increased and toxins are removed from the body.

- The low temperatures in the cryosauna helps to reduce physical stress.
- The endorphins released during the session cause a feeling of euphoria. And that, in turn, improves the quality of sleep, helping the body to rest and recover.
- The endorphins can also reduce feelings of anxiety and irritation.

- The analgesic effect of nitrogen reduces inflammation, relieves joint and muscle pain, reduces the frequency of migraine, and relaxes the limbs.
- Low temperatures also help activate the body's immune system.

- By oxygenating the skin and flushing out toxins, cryosauna significantly reduces cellulite and psoriasis.
- Thanks to cryosauna, the condition of the skin improves, tissue regeneration is accelerated, wrinkles and age spots are reduced, and skin tone is increased.
- As a result, the skin becomes smoother, tighter and more elastic.

Recommended Set of Advanced Procedures

In a broad sense, **fitness** allows the body and its muscles to be prepared for various physical loads. It also helps **improve blood circulation and skin condition**, as well as increases muscle tone and endurance. Regular exercise normalizes metabolism, reduces stress and fatigue, increases immunity, improves the condition of the joints, reduces the risk of arthritis, arthrosis, and osteoporosis, and corrects posture. The goal of fitness is to improve aerobic endurance, achieve greater flexibility, and increase muscle strength.

Contraindications include:

- problems with the spine;
- recent surgeries;
- tumors;
- bleeding;
- diseases of the gastrointestinal tract;
- varicose veins;
- liver disease;
- kidney disease;
- urolithiasis;
- lung disease iyah;
- heart disease.

Source: Media overview

Fitness Benefits include

Improvement of aerobic endurance. A series of exercises performed several times a week helps improve the cardiorespiratory system

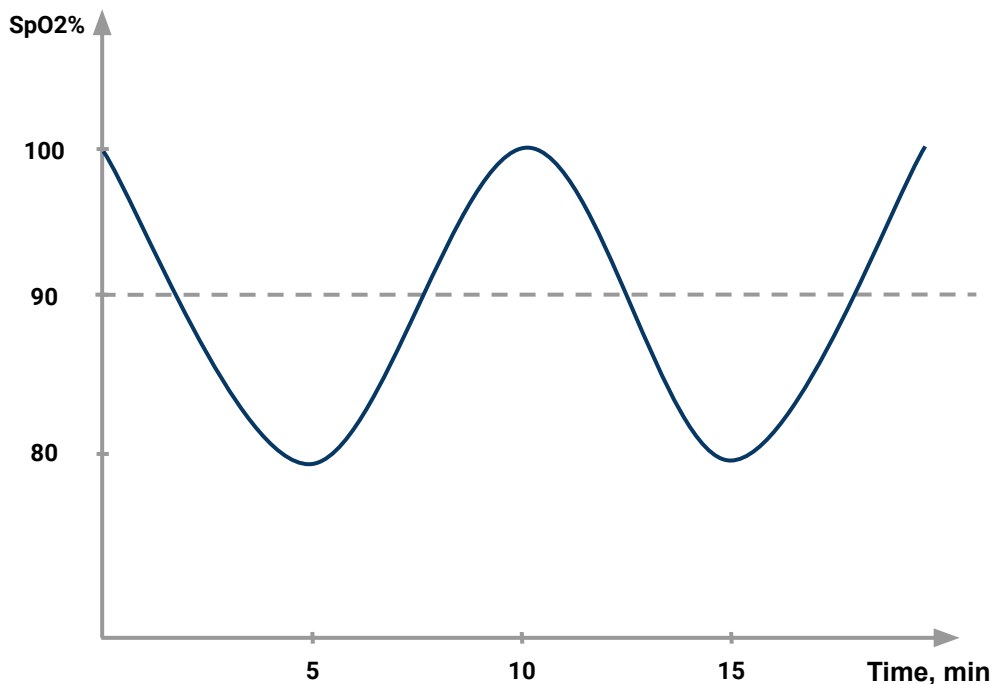
Physical condition and appearance are improved

The risk of obesity, cardiovascular disease, hypertension, and increased cholesterol levels is reduced

Reduced stress or depression

Recommended Set of Advanced Procedures

Oxygen Level Change During Intermittent Hypoxic Training



By **reducing the amount of oxygen entering the body stimulates the production of red blood cells in the blood** (aka hematopoietic response) **and improves oxygen transport.**

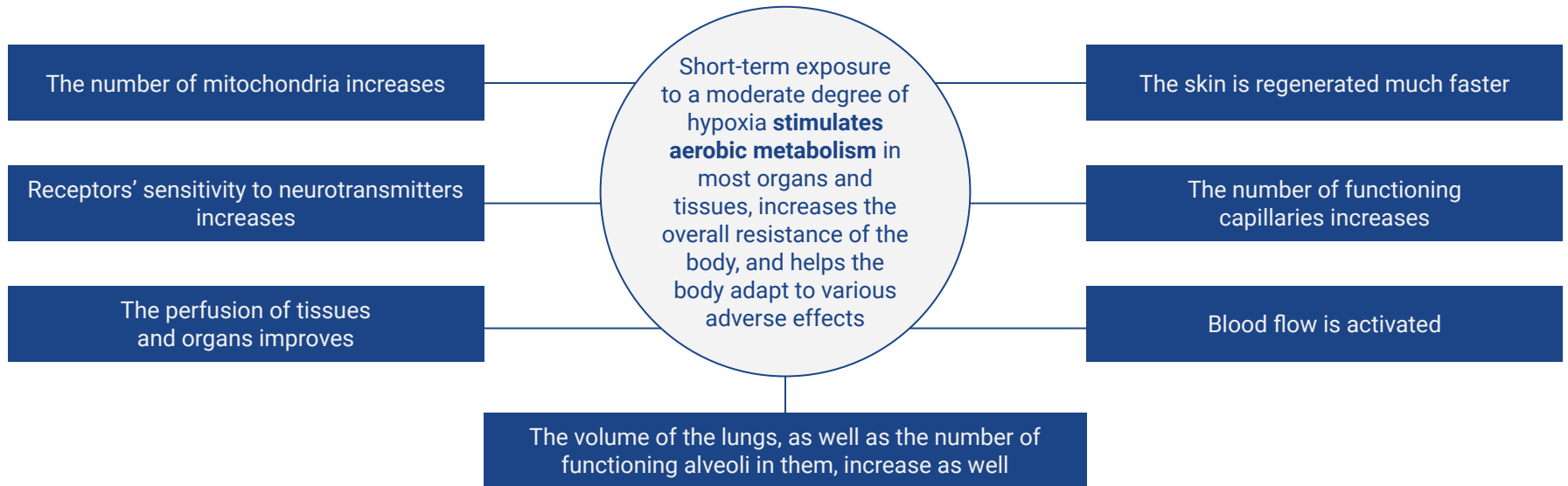
“Hypoxia” refers to lower-than-normal oxygen levels in the blood. Normal blood oxygen saturation ranges between 95% and 100%. Anything below 90% is considered abnormal.

Intermittent hypoxic training is based on a short-term decrease in the level of oxygen in the blood, followed by a return to the initial values. Air with oxygen content of 10-15% is supplied through the mask. In response to this, the level of oxygen in the blood decreases. After that, air with oxygen content of 30-40% is supplied through the mask until oxygen level returns to normal.

Recommended Set of Advanced Procedures

A good example of hormesis and its therapeutic effect on the body is **intermittent hypoxia**. There are many studies suggesting that training under hypoxic conditions can result in a significant increase in the body's resistance to various external and internal pathogenic factors.

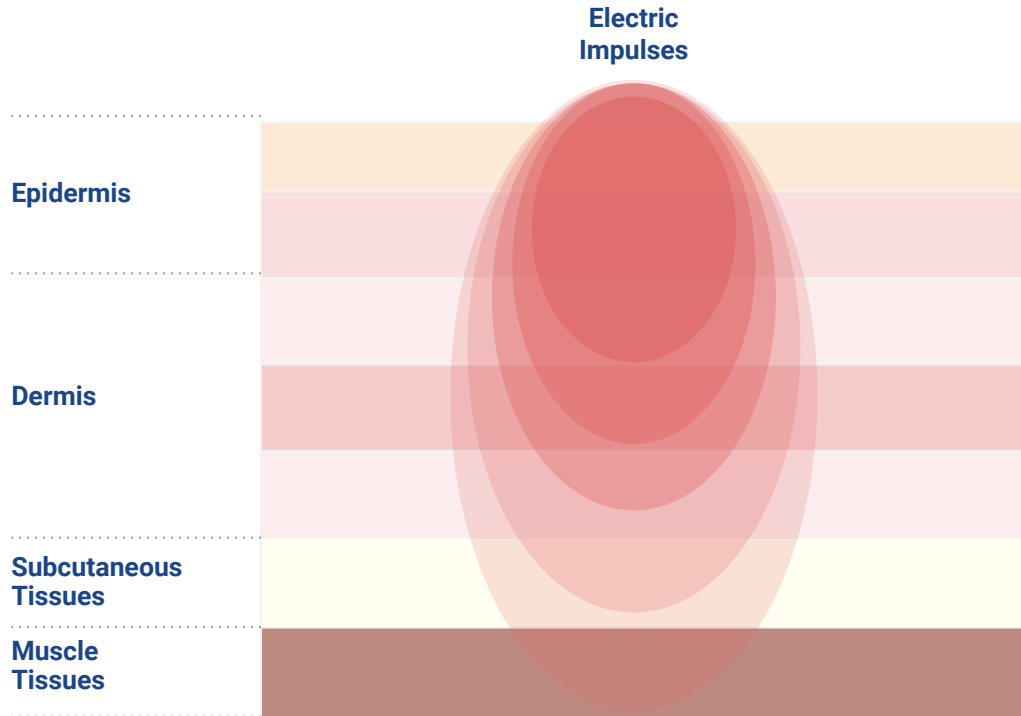
Nowadays, increasingly more experts are **using hypoxia training for various purposes**, including therapeutic ones. In the process of training, the adaptation mechanisms of the body are triggered at the molecular and cellular levels. As a result, various physiological functions and mechanisms of their regulation improve.



Source: Media overview

Recommended Set of Advanced Procedures

Electrical Muscle Stimulation Skin Effect



Electrical muscle stimulation (EMS), is the provocation of muscle contraction using electric impulses. EMS has received an increasing amount of attention in the last few years for many reasons: it can be utilized as a strength training tool; as a rehabilitation and preventive tool; it could be utilized as a testing tool for evaluating the neural and/or muscular function in vivo.

This stimulation creates muscle contractions that can last from a few seconds to minutes. EMS devices elicit deep, intense, and complete muscular contractions without actually activating the central nervous system.

But the EMS is not only limited by muscle training and therapeutic use. **EMS is the ideal treatment for toning the face muscle to tighten the skin.**

Recommended Set of Advanced Procedures

Microcurrent Facial procedure, a variation of electrical muscle stimulation, **uses low-voltage electricity to stimulate the facial muscles.**

Collagen, hyaluronic acid, and elastin are crucial elements for youthful skin, and are declining in concentration with advancing age. **Microcurrent facials have the ability to stimulate collagen.**

Contraindications are as follows:

- pacemaker or other implanted electronic devices;
- epilepsy;
- pregnancy (client or esthetician);
- cancer;
- thrombosis;
- phlebitis;
- under a physician's care for a disorder, illness, disease, or injury.

Microcurrent Facial Procedure Benefits

Stimulates the recovery of damaged tissue

Aid in lymphatic drainage

Improve muscle tone and contour in the face/neck

Reduce fine lines and wrinkles

Temporarily improve local circulation

Firm and tighten skin

Temporarily improve local circulation

Enhance product penetration

Anti-technologies



Anti-technologies: Overview

The list of **aesthetic procedures, beauty preparations, and cosmetic equipment is constantly being expanded**. New technologies and products are providing modern-day consumers with an opportunity to smooth out wrinkles, whiten the skin, shrink pores, remove cellulite, eliminate age spots, increase skin elasticity, prevent wrinkles, remove acne scars, restore or remove hair, improve breast size, and shape, augment lips, remove tattoos, and regulate hormone level. And the list is by far not an exhaustive one.

Nowadays, cosmetologists have to deal with an increasingly large amount of information, including unethical advertising from manufacturers. Hence, choosing **safe and effective technologies/procedures meeting their customer expectations** and allowing them to improve their appearance can be quite a challenge for them.

In cosmetology, “anti-technologies” stands for dangerous and ineffective drugs and methods that are **promoted as reliable, effective, or innovative**.

Source: Media overview

Most Common Anti-technologies

Fillers in Cosmetology and Aesthetic Medicine

Micropigmentation

Peelings

PRP in Dermatology and Cosmetology

Anti-cellulite Products

Fillers in Cosmetology and Aesthetic Medicine

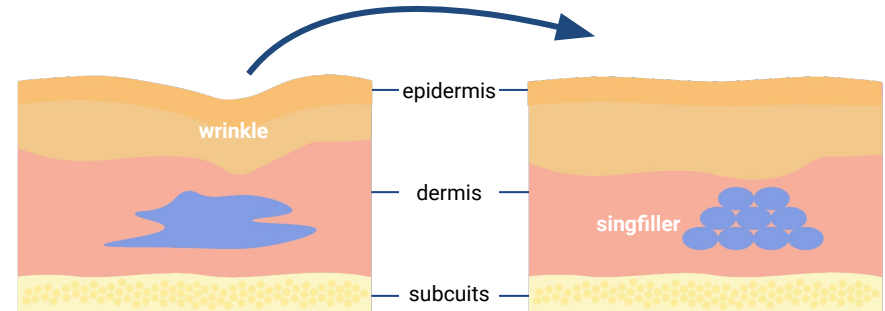
In aesthetic medicine, **facial contouring with injectable dermal fillers** is one of the most popular procedures. Alleged to be minimally invasive due to the biocompatibility of the materials used, it can still cause **serious complications, including loss of vision.**

Initially used for lipodystrophy and correction of serious tissue defects, fillers proved to be highly effective and are now used to reverse age-related changes (e.g. change proportions and increase tissue volume in healthy people). Given the potential risks involved in the procedure, **using fillers raises safety concerns.**

Fillers can be:

- Absorbable (temporary);
- HA-based;
- Calcium hydroxyapatite;
- Poly-L-lactic acid (PLLA);
- Non-absorbable (permanent);
- Polymethylmethacrylate microspheres.

Mechanism of Action:



Micropigmentation

Micropigmentation, also known as **permanent makeup**, permanent cosmetics or cosmetic tattooing, is a cosmetic procedure used to **improve or replace lost coloring on your skin**. Micropigmentation is most often used on your face – to enhance eyebrows, eyelashes, eyelids (as eyeliner) and lips. It's also used to camouflage or improve scars, even out skin coloring and restore color to areas of skin that have lost color.

Micropigmentation is especially helpful if you are a person who wants to look their best while **avoiding the physical challenges of applying makeup**.

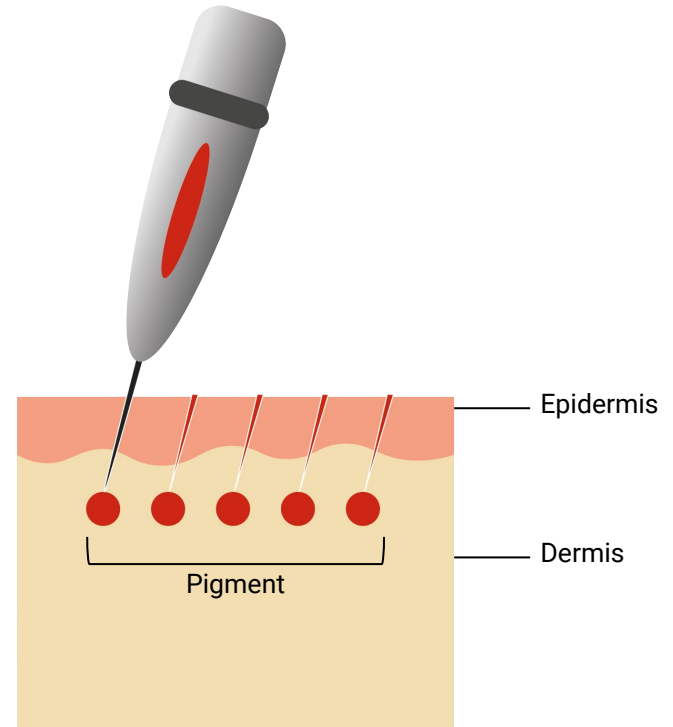
Eyebrows, eyelashes, eyelids, lips are common treatment areas. Considerations include number of treatments needed, complications and out-of-pocket costs.

Potential Danger

Reactions that have been reported include **swelling, cracking, peeling, blistering, and scarring** as well as formation of granulomas in the areas of the eyes and lips. In some cases, the effects reported caused serious disfigurement, resulting in difficulty in eating and talking.

Source: Cleveland clinic website

Micropigmentation Procedure



Peelings

Depending on the condition of the skin and the type of peeling used, peeling may have different complications. If the skin suffers from age-related changes and photoaging, **deep peeling may significantly increase the likelihood of serious complications.**

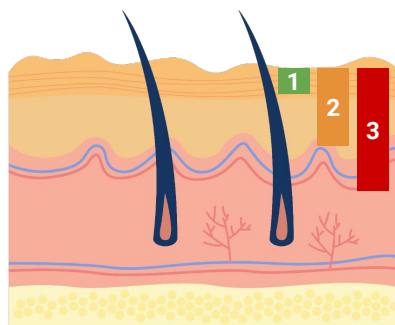
The deeper the skin is affected, the higher the risk of complications. Deep peeling may result in expected and temporary complications, such as pain, itching, redness, and edema. Other complications may include **allergic reactions, folliculitis, acne, infection or even skin cancer.**

Types of Peelings:

- superficial (affecting the stratum corneum);
- superficial-median (affecting the granular layer of the epidermis);
- median (affecting the basement membrane and the upper layers of the papillary dermis);
- deep (affecting the reticular layer of the dermis).

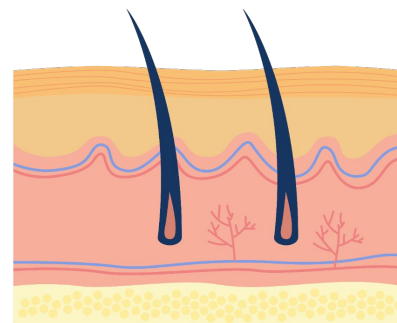
Source: Maria Carvalho Costa

Chemical Skin Peelers



Before

- 1 Superficial Peels
- 2 Medium Depth Peels
- 3 Deep Peels

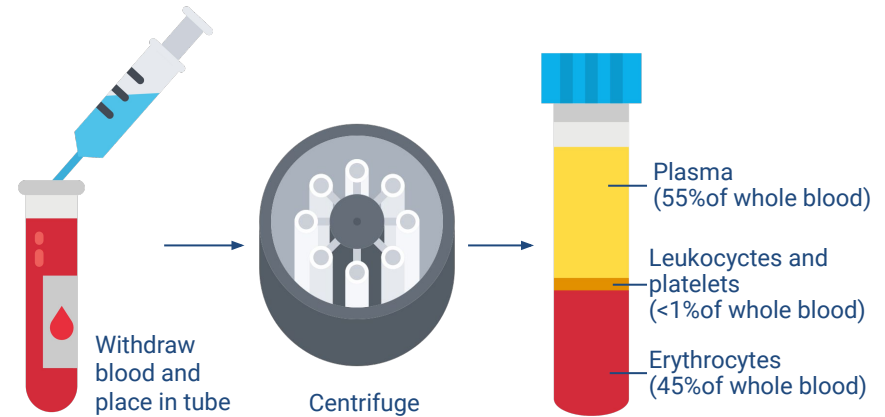


After

PRP in Dermatology and Cosmetology

Platelet-rich plasma (PRP) is widely used in various fields of medicine, including dermatology and aesthetic medicine. Its action is based on the assumption that an increased concentration of platelets triggers regenerative processes more effectively. Some service providers refer to this method as Fibroblast treatment, thus **overestimating the PRP procedure.**

In fact, fibroblasts are connective tissue cells that are present in the dermis, cartilage, joints, and ligaments. PRP therapy works by activating fibroblast cells and stimulating the production of collagen. However, it may prove ineffective in case of severe fibroblast deficiency (as in aging skin) or dystrophy. For this reason, **PRP therapy may be less effective than Fibroblast treatment, especially in older people.**



Adverse Effects

Adverse effects have been poorly studied. In 2019, Health Canada stated that most autologous cell therapies have little evidence showing they work and can pose risks, such as cross-contamination between people if equipment is not sterilized properly or potentially dangerous immune reactions.

Anti-cellulite Products

Cellulite (or fatty lipodystrophy) is primarily caused by metabolic disorders, lymph drainage or inadequate blood flow. **Anti-cellulite creams and wraps are unable to penetrate into the deep layers of the skin** (i.e. where this process takes place); hence, they're virtually useless.

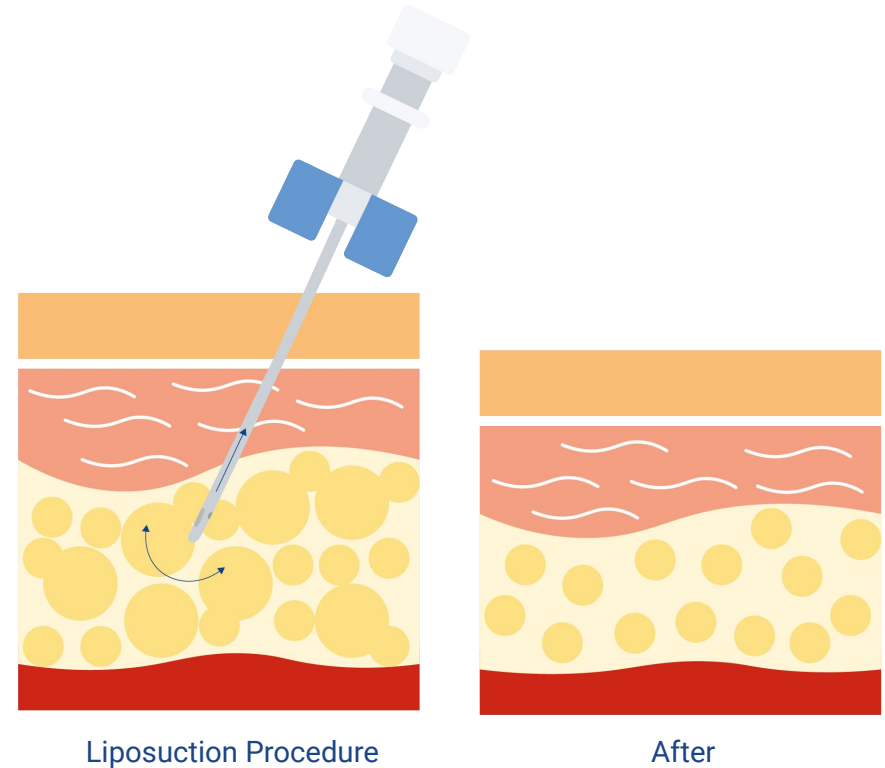
The early stages of cellulite are absolutely natural, safe, and almost invisible. They can be easily removed with the help of hardware cosmetology, Charcot's shower, weight optimization, and systematic exercise. Severe cases of lipodystrophy require treatment; however, it can only partially reduce its manifestations.

Some side effects and complications include, but are not limited to, the following: pain, which may be temporary or chronic, bruising, infections, embolisms may occur when loosened fat enters the blood.

Potential Danger

There exists a spectrum of complications that may occur due to any liposuction. Risk is increased when treated areas cover a greater percentage of the body, incisions are numerous, a large amount of tissue is removed, and concurrent surgeries are done at the same time.

Procedure for Liposuction



Market Trends

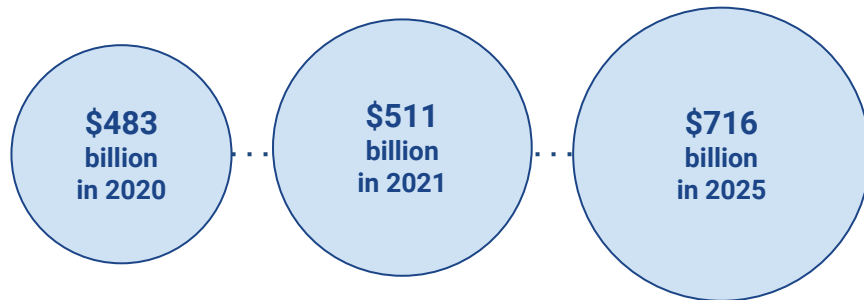


Advanced Cosmetics Market Growth

The beauty market has continued to become more closely related to the health and high technology markets. One of the examples of this trend is developments in the field of high technologies that are used to assess the condition of the skin and predict its changes in the future.

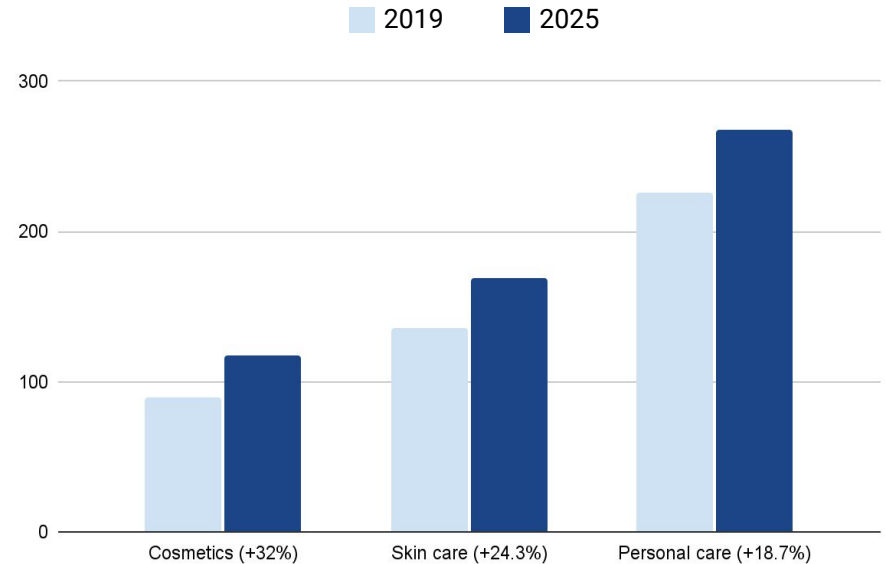
In 2020, global beauty market was estimated at approximately \$430 billion. Today, in 2021, it is estimated at about \$ 511 billion. With **4.75% growth rate**, the beauty market capitalization is expected to exceed **\$700 billion by 2025**.

Beauty and personal care market worldwide



Source: Reports Globe (2021)

Growth Rate within Beauty and Personal Care Market



Source: L'Oreal (2020)

Market Trends in Advanced Cosmetics

Skin pH and Microbiome

The skin is an acidic environment, with pH values from 4 to 6. If the skin is too acidic, it increases the likelihood of inflammatory skin conditions, such as eczema and acne. And if the skin has a low acidity level, it is less protected from the spread of infectious agents. Accordingly, caring for the skin microbiome and its acidity level continues to be among the main trends in cosmetology.

Skin Care Devices & Software

Nowadays, not only cleaners, scrubbers, massagers are provided for skin care, but also automated gadgets such as smartwatches and smartphones which are monitoring skin condition of user. The popularity of such devices indicates that they will only get better and their number will grow in the near future.

Advanced Procedures

Advanced procedures trends have greatly evolved through years. Now top-priority is leveling the consequences of a poor-quality lifestyle by balancing microelements and enhancing metabolism through fitness activity.

Anti-aging Procedures

Because anti-aging procedures involve not only the influence on the outer layers of skin in order to affect its appearance, but also influence on the condition of many other cells of different tissues, these procedures are considered an important part of the field of cosmetic treatments.

Cosmetics Technologies

During the last years cosmetics technology market become more connected with biotechnology and medicine. Trend on using stem cells in cosmetology, competent use of minimally invasive surgery and hardware cosmetology procedures is keep growing up.

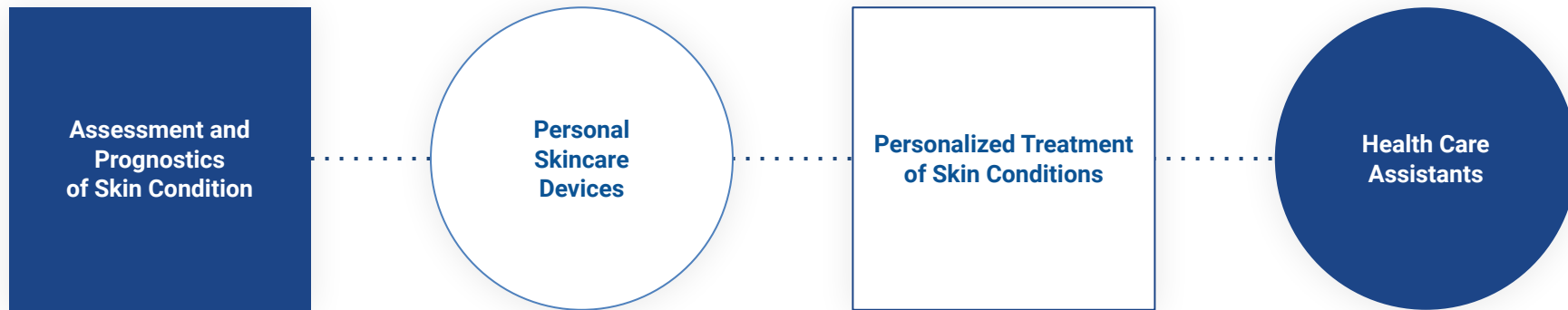
Polyglutamic Acid

A number of scientific publications have confirmed the beneficial properties of polyglutamic acid, including reducing the effects of wrinkles and aging, improving skin hydration and stimulating the synthesis of collagen and elastin. In this regard, hyaluronic acid is considered as one of the most effective skin moisturizer.

Skin Protection from UV Rays

“Healthy tan” is the most common delusion about tanning. Fortunately, more and more people are becoming aware of the dangers of UV rays and the need to protect skin with tanning creams and other protection methods.

Market Trends: AI Trends



Performing professional multifactor skin assessment is crucial for predicting and prevention the development of various skin disorders and skin aging associated effects.

Already today, home devices constitute a serious competition to the salon care. Based on the current level of technology development, it is expected that jars of creams will give way to smart devices that allow us to perform many salon procedures at home.

For the purposes of safety and effectiveness, the appointment for the procedure, type of procedure and its technique should strongly depend on the characteristics of the skin and the body in general.

The use of AI and big data make healthcare software, including skin care software, more personalized and accurate on a case-by-case basis.

Conclusions



Key Takeaways



The **Autologous stem cells market** is projected to reach **\$11 Bn**. Autologous stem cells don't rely on direct stem cell transplantation and **offer the same efficacy as traditional stem cell transplantation** therapies. Given that stem cell properties have not yet been fully explored, they **are required pre-marketing approval**



Autonomous Stem Cells For Face Skin Rejuvenation. Intradermal injections increase the long-term number of fibroblasts and the physiological balance of the skin, which helps to **fight the very causes of aging with significant effect after 7-12 month**



The **Microbiome of Body** helps to strengthen the immune defense of the human epidermis, because using biome-friendly cosmetics helps restore the balance of microflora, eliminates aesthetic imperfections and symptoms of dermatological diseases, and improves the skin in the safest possible way



The **Microbiome of Face** increases the level of glycerin and lipids in the skin's protective layer, reducing the intensity of moisture evaporation. Using products with bacteriophages is a real breakthrough, **allowing to point-wise remove pathogenic bacteria from the skin microflora**



In 30-40% of cases, the flora of the oral cavity becomes the cause of aspiration pneumonia and lung abscesses, affects pathological changes in the digestive system. Therefore, **oral hygiene**, using of probiotics, plant extracts, propolis, bacteriophages, sea and table salt will help normalize the oral microbiota composition.



Nowadays, technologies, tools, and medicines designed to solve problems with **Weight Optimization and Obesity** are becoming increasingly available, for example, dietary supplements and massages helping painlessly optimize metabolism are already there.



Cosmetological procedures for body muscles are meant to improve body shape, combat excess weight, saggy muscles and restore skin tone in the postoperative period. The most promising methods are electrical muscle recovery, vacuum roller massage, cryotherapy and pressotherapy

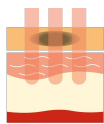
Key Takeaways



Facial Skin and Hair, Cosmetic Surgery on the Face. The most popular hair restoration procedure is **follicular unit extraction (FUE)** because hair transplant surgery is painless and often achieved in one go. The **intense pulsed light** method (**ILP**) may reduce the appearance of pores by improving skin texture and increasing firmness but increases the risk of skin cancer



Dietary supplements and Nutraceuticals combine the latest scientific advances and principles of P4-medicine and refer to dietary supplements designed to improve skin, hair, and nails. This causes **rapid skin renewal, healing of scratches, cracks, and other injuries**, acceleration of nail growth by 12%, reduction of fragility by 42%, and in 80% of cases the nails become smoother



Apparatus Cosmetology involves treating problem areas of the face and body with physiotherapy equipment. It includes lasers applications for cosmetic purposes, which help remove tattoos and rejuvenate skin; peeling; microcurrent therapy and LPG massage, which helps to remove cellulite and fat deposits, tighten the skin and eliminate back pain, which is especially necessary for people with a sedentary lifestyle



Advanced Procedures are vital as they can safely help **stimulate Hormesis** - adaptive response of the body to low doses of harmful factors which helps our body becomes more resistant to stress and begins to heal itself at the cellular level



The use of AI in the field of dermatology may be beneficial to patients and dermatologists alike. Technology can **augment decision-making** but cannot replace dermatologists. However, AI skincare companies **like Haut.AI are on the edge of technology usage.**

Aging Analytics Agency: Value Proposition

Aging Analytics Agency is the only specialized analytics agency in the world that focuses exclusively on the emerging Longevity Industry. They are recognized internationally as the premier analytics agency for advanced data analysis, industry reports and next-generation infographics on the topics of Aging and Longevity.

Aging Analytics Agency is focusing on three key activities:

Providing Commercial Services

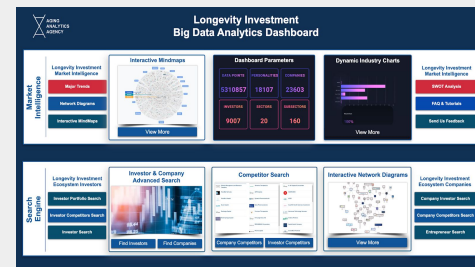
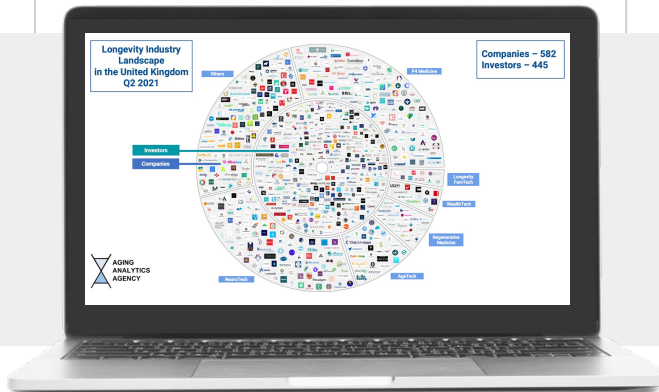
Conducting customised case studies, research and analytics for internal (organizational) use, tailored to the precise needs of specific clients.

Preparing Open Access Reports

Producing regular open access and proprietary analytical case studies on the emerging topics and trends in the Longevity Industry.

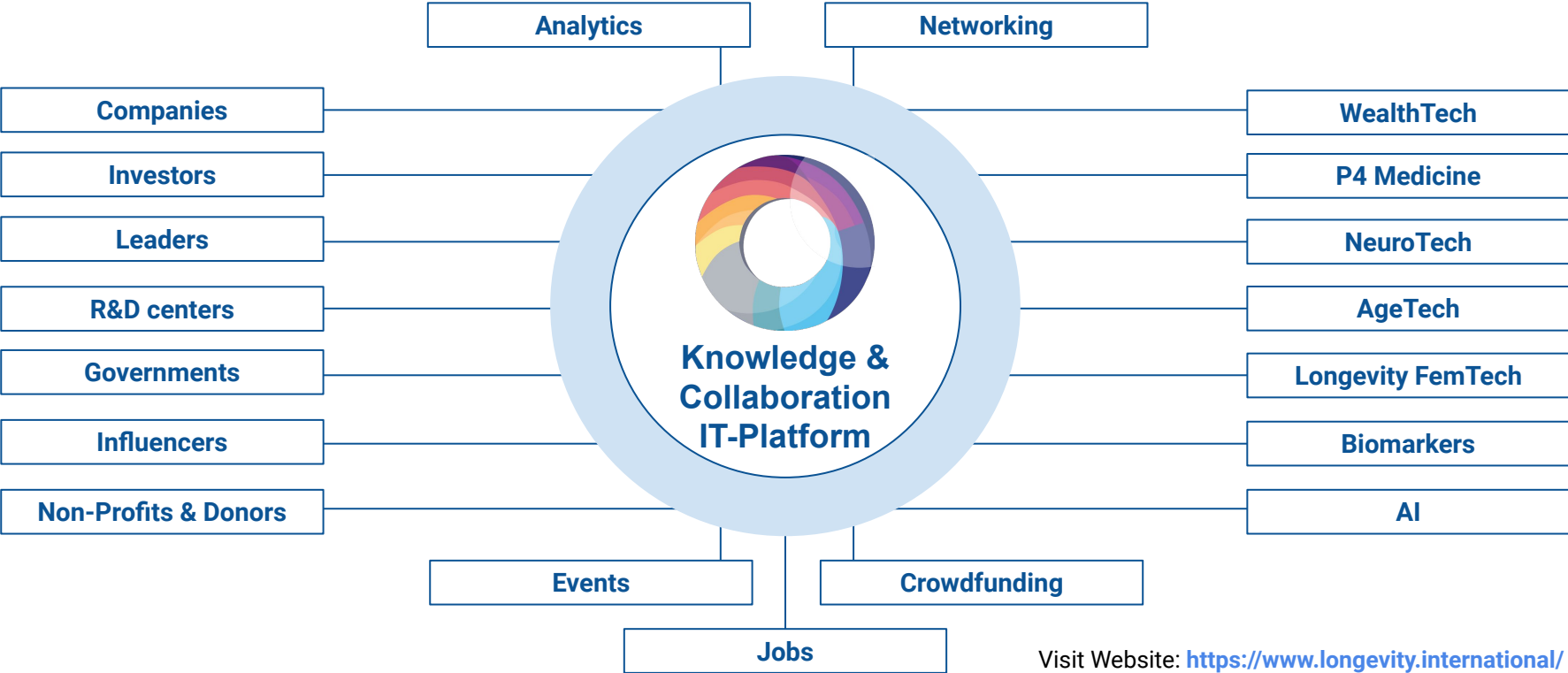
Building Big Data Analytics Platforms

Offering customised analysis using specialised interactive industry and technology databases, IT-platforms and Big Data Analytics Dashboards.



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