Mitra Bio

ONE SKIN

Company Profile

Aging reinvented: “Aging is inevitable, how you age is not”

OneSkin is a San Francisco based company that is catalyzing a paradigm shift within the cosmetic’s industry by targeting a root cause of aging within the skin, thereby rejuvenating it from the inside out. In this way, skin doesn’t just look healthier, it functions like younger skin on a cellular and molecular level. This is enabled by a cutting edge and proprietary R&D platform that is used to develop, validate and optimise novel longevity molecules that prevent and rejuvenate damages that drive the process of biological aging.

Founded in 2016, OneSkin’s origins began with four female scientists within a doctoral lab in Brazil that were united by a common passion: to liberate biotechnology insights from the confines of the academic setting and instantiate them in the real world. In doing so, OneSkin’s central mission is to alleviate age-related suffering by developing technologies that can reverse the aging process. With this mission in place, they decided to start with the largest organ in the body and most accessible target in the longevity market, the skin. This marked the beginning of a journey to transform the way humans experience aging, so that they could age in a healthy and vibrant way and live their best lives, every day.

“We are not a skincare company, we are a skin longevity company”

In an effort to truly characterise the state of the cosmetics market, the founders started their journey by developing biological age assays to validate existing antiaging products. From this process, they learned that most products targeted and/or concealed symptoms of skin aging and not its underlying, cellular and molecular drivers – the hallmarks of aging. This was OneSkin’s “call to action”, to transform the status quo “skincare approach” into a strategy that encapsulated true skin longevity.

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There are several hallmarks of aging that are viable targets to improve skin health. For the founders of Oneskin, one hallmark of aging stuck out above the rest as a candidate for achieving rejuvenation – cellular senescence. This is due to its profound influence on skin aging and potential to spread inflammation and damage throughout the body like “wildfire”. As such, senescent skin cells have been alleged to accelerate biological aging and are implicated in driving chronic diseases such as cardiovascular disease, diabetes and Alzheimer’s.

This spurred OneSkin to develop its proprietary screening platform to identify novel peptides that effectively target and neutralise senescent skin cells, a class of molecules called senotherapeutics. This led to the discovery of the senotherapeutic peptide OS-01, which OneSkin subsequently incorporated into a “first of its kind” line of topical supplements designed to extend skin health (i.e. skin-span) on the molecular level by targeting cellular senescence. The company’s current pipeline includes:

- OS-01 Face Topical Supplement
- OS-01 Body Topical Supplement

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The field of senotherapeutics is still young and most data is confined within the lab or lengthy clinical trials. OneSkin is the first and only company using senotherapeutics within the aesthetic field. This puts them in the unique position to collect data en masse and translate their insights to not only other skin zones, but other organ systems of the body and chronic diseases of aging.

“Science First Approach”

One of the core tenets of OneSkin is its “science first” approach. The company operates end-to-end R&D in-house with a team of experts in stem cell biology, skin regeneration, tissue engineering, biochemistry, bioinformatics, molecular biology, immunology and aging. Their proprietary technology and lab process includes growing 3D human skin (from cells derived from skin biopsies) weekly and measuring how various compounds influence skin aging and longevity at the molecular and cellular level. This results in data driven products that evolve with the fast pace of biotechnology and are rooted in the scientific process. Further, its customers are connected to every step of the process and new piece of data that arises. Ultimately, OneSkin seeks to use its scientific rigour and senotherapeutic approach to help power its pipeline and empower its customers to take control of their aging trajectory.

“We believe the best antiaging treatment is one that is rooted in science, with data-backed claims. That’s why our topical products go beyond placing a metaphorical band-aid on aging skin – it addresses the molecular changes associated with aging to not only boost skin health, but overall health as well’

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Flagship Product Deep Dive: OneSkin's OS-01 Face and Body

"Enhancing Skinspan with Senotherapeutics"

OneSkin coined the term "skinspan", which refers to the length of time that an individual's skin is healthy and functional. But those are just surface level attributes that can be temporarily maintained while the deeper, molecular damages of biological aging accrue and ultimately result in disease. Therefore, truly healthy skinspan is driven by youthful cellular and molecular functioning of the skin. Cellular senescence is one of the most insidious drivers of biological aging due to its self-perpetuating, systemic effects. Targeting senescence with senotherapeutics is one of the few longevity interventions that have been shown to achieve systemic rejuvenation in multiple animal studies.

Cellular Senescence – a programmatic shift that is initiated when cells accumulate damage past a certain "threshold" that is characterised by an inability to divide, death resistance and the secretion of factors (called SASP) that drive inflammation, degrade extracellular matrix proteins and induce further senescence in neighbouring tissues.

Unlike other skincare products that offer short-term solutions (and might even cause long-term damage), OneSkin's mission is to extend skinspan by addressing skin aging at a grass-roots level. This is accomplished with its topical senotherapeutic peptide OS-01, which targets those cells that are most vulnerable to cellular senescence and have the greatest impact on skin aging.

OS-01

"The power of OneSkin's proprietary platform technology and process"

OneSkin's patented senotherapeutic peptide OS-01 wasn't just stumbled upon, it was identified and optimised via an extremely rigorous screening process that involved:

First, OneSkin's R&D team used computational algorithms to build a library of over 800 novel peptides predicted to have substantial senotherapeutic properties. Each peptide was then evaluated for its effectiveness at reducing the amount of senescent cells within 3D human skin models. From this process, OS-01 shined above the rest at reducing cellular senescence in the skin without inducing toxic effects. Not only that, OS-01 demonstrates unique capabilities as a senotherapeutic by targeting key genes involved in longevity signaling and the suppression of SASP factors. In doing so, OS-01 not only neutralises the inflammatory and aging effects of senescent cells and suppresses their "self-propagating" effects, but it also enhances damage repair to prevent senescence in the first place. A two-in-one prevention / rejuvenation strategy.

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Working in harmony with its “Science first” tenet, OneSkin went on to evaluate OS-01 for its ability to reduce the biological age of the skin in a sample set of 40-70 year old donors. This was done through a comprehensive array of skin health diagnostics, including the construction of the very first biological age clock for the skin called MolClock. The clock was constructed using machine learning to analyze over 500 human skin samples and 2000 DNA methylation (DNAm) markers to detect important epigenetic alterations that occur as skin ages. The result was a highly accurate skin biological age diagnostic that could predict the molecular age of someone’s skin more robustly than any other diagnostic tool in existence. OS-01 reduced the skin’s biological age by 2.5 years after only 5 days of treatment and significantly improved other skin health markers including epidermal thickness, cellular repair and collagen production. Improvements in skin health were observed even relative to retinol and rapamycin treatment, the gold standards for “antiaging” treatments within the cosmetic and pharmaceutical realms, respectively.

OS-01 Face and OS-01 Body

The different skin zones of the human body feel, behave, react and age differently. Therefore, they have very different characteristics and needs. OneSkin has appreciated the depth of these nuances by developing two, personalised topical supplements: OS-01 Face and OS-01 Body. Each of its products are specifically formulated for different areas of the skin but are both powered by their proprietary senotherapeutic peptide.

OS-01 Face was formulated for areas of the skin that are thinner, more delicate and most vulnerable to damage from environmental stressors (UV radiation, air pollution, &c) – including the face, hands and neck. Accordingly, this formulation includes a higher concentration of OS-01 to boost cellular repair, while also keeping the formula light and non-irritating. Supporting ingredients were chosen for their additional damage repair, barrier enhancement and hydration properties. This includes hyaluronic acid and andiroba oil which support cellular repair and regenerative capabilities of the skin.

OS-01 Body was formulated for all other areas of the skin that are typically more robust, less exposed to environmental stressors and follow a different aging trajectory. The concentration of OS-01 was optimised for skin penetration and to support the relative levels of cellular repair required for the rest of the body. Supporting ingredients, such as sulforaphane, have powerful anti-inflammatory and antioxidant effects that help combat the damages caused by intrinsic skin aging. Further, prebiotics (Saccharid Isomerate) are included to support the health of the skin microbiome on those areas of the skin. This level of personalisation between OneSkin’s products is a testament to the quality of its scientific rigour and expertise.

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Evidence of safety and efficacy

Scientific evidence in support of efficacy and safety

“Beauty” does not have to be painful or complicated; neither does aging. We believe what we put on our skin should be safe, effective and contribute to maximising our human potential.

The longevity scientist’s at OneSkin have applied vigorous scientific rigour and exacting standards into formulating the safest, most effective topical formulations possible that are vegan and cruelty free and include safe and clean ingredients. OneSkin’s formulations even take into account avoiding disturbing the skin microbiome, a factor that is a blindspot for many companies within the skin health space. The safety of OneSkin’s products is demonstrated by the stellar performance of OS-01 Face on the Environmental Working Group’s safety scale and cosmetic database. Further OS-01 Face was tested for human sensitisation and toxicology in clinical studies and was found to have no adverse effects.

In addition to the safety studies performed by the company, OneSkin has currently completed 1 clinical trial for its OS-01 Topical face product and another clinical trial is underway and should wrap up this year. The completed trial was a 12 week clinical study (conducted by a 3rd party CRO) on 22 females aged between 47 and 65 years with dry, normal and combination skin types.

This trial showed that twice daily application of OS-01 Face provided remarkable visual and functional benefits based on blinded clinical evaluations as well as self-report assessments. This includes improved skin barrier function, hydration, evenness, pores, radiance, firmness, increased skin elasticity, fewer wrinkles and improved overall smoothness and appearance.

A second clinical trial with OS-01 Face is still ongoing and will assess biological age (using MolClock) in individuals using the product over the course of a year. The trial is set to complete by Q3 2022. OneSkin is also executing a third clinical trial which will test the efficacy of OS-01 Body topical cream on addressing whole body skin aging in 60-80 year old individuals. Aside from classic phenotypes of skin aging (wrinkles, elasticity, smoothness), outcome measures from this trial will also include measuring plasma levels of various inflammatory markers including IL-6, IL-8 and IL-1 alpha – all of which are indicative of chronic inflammation, are markers of senescent cell burden and drive diseases such as osteoarthritis, IBS and Alzheimer’s disease. This trial is set to run for 3 months, involve approximately 70 participants and will be critical for demonstrating how OneSkin’s OS-01 topical creams mitigate overall, systemic biological aging.

One key takeaway from OneSkin’s clinical trials is that daily application of OS-01 topical creams are required to promote skin longevity and healthy skinspan. Rather than providing a quick fix or temporary relief, OneSkin promotes long-term skin care and health. As such, most users start seeing healthier, stronger and better-looking skin in 4-8 weeks with daily use.

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Future development

“Some people want to buy us, but OneSkin is not for sale”

OneSkin is currently closing a successful round of Series A funding and is steadfast in its mission to transform the cosmetics and longevity industry with its powerful senotherapeutic powered pipeline. Accordingly, the OneSkin founders have no plans for big exits. Rather, they are focusing on growing the team to help with operational responsibilities and expanding partnerships to include dermatologists, health professionals,and other companies making “big waves” in the longevity field with their powerful aging diagnostics including Mitra Biosciences. This and other partnerships which are still under negotiation will provide great value in strengthening OneSkin’s product pipeline as well as their sustainability as leaders in the forefront of both the cosmetic and longevity fields.

OneSkin’s cutting edge R&D platform and process is one of their strongest assets. It keeps them ahead of the competition by providing them with the ability and agility to continuously test, iterate and optimise previous senotherapeutic products as well as discover novel skin longevity compounds and create new formulations. OneSkin completely owns and meticulously oversees its whole supply chain from research and development, to formulation and validation. There are only two steps the company outsources. One is clinical trial testing, which lends further credence to the quality of their results and elimination of scientific bias. The second is production, but the company keeps a close eye on product quality.

OneSkin also plans to expand its R&D to optimise its OS-01 senotherapeutic to target hair loss as senescent cells are a primary driver of hair aging. OneSkin’s expansion into other areas of aesthetic health is a harbinger for future applications to address diseases that affect other tissues such as the brain, kidneys, gut and muscles. Currently, OneSkin is focused on optimising commercialisation (packaging, sustainability, eco-friendliness) and adding international shipping options for their products.

Target market

OneSkin is targeted for a range of individuals starting from people in their early 30s (and beyond) as this is when individuals start seeing changes in skin age biological markers and their products hold promise to be a critical factor in a skin aging preventative strategy. As OneSkin’s preclinical and clinical results are mostly demonstrated in older demographics, it is also primed to help elderly individuals seeking skin rejuvenation.

Channels to market

OneSkin mainly focuses on a direct to consumer (DTC) approach through their E-shop https://www.oneskin.co/collections/all. The company also operates an extensive partner program with certified skincare and health professionals at the forefront of advanced skincare technology and science in areas such as longevity, aesthetics and holistic health. OneSkin plans to further expand its reach to dermatologists before entering the retail market.

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Success Factors

Team and Reputation

Key Team Members:

OneSkin is a product of the IndieBio startup accelerator and backed by Peter Diamandis. The company currently has 10 employees.

Peter Diamandis MD – Advisory Board member. Founder and executive chairman of the XPRIZE foundation and Singularity University. Recently named by Fortune as one of the “World’s 50 Greatest Leaders”.

Lear Brace PhD – Director of Research and Development. Harvard University graduate studies and Postdoctoral Research Fellow in Brian Kennedy lab, Buck Institute for Research on Aging

Carolina Reis Oliveira PhD – co-founder and CEO. Biotechnology entrepreneur and Alumnus of IndieBio, the world’s leading biotechnology accelerator

Alessandra Zonari PhD – co-founder and CSO. Training in stem cell biology, skin regeneration and tissue engineering. Co-inventor of 7 patents and has published in 20 peer-reviewed papers in scientific journals.

Mariana Boroni PhD – co-founder and Head of Bioinformatics. Head of Bioinformatics and Computational Biology Lab at the Brazilian National Cancer Institute. Co-inventor of 7 patents and has published in more than 35 peer-reviewed papers in scientific journals. Juliana Carvalho PhD – co-founder. Trained in molecular biology, biochemistry and immunology. Professor of Pathology and Faculty of Medicine at the University of Brasilia. Co-inventor of 10 patents and has published in 50 peer-reviewed papers in scientific journals.

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Unique Approach

“We want to be transparent about our developmental process, and we want to empower people to take action about their health. We want to demonstrate a warmth and approachability for our customers, but never forget it’s all about the science!”

Company ecosystem

OneSkin boasts a strong team of female leaders and scientists that supplement each other with their diverse backgrounds. There are several components of OneSkin’s strategy that makes it unique as an Advanced Aesthetic’s company:

They are the first company to target aesthetic health with topical senotherapeutics

They have created the very first biological aging clock that is specifically for the skin and can be used to screen and validate longevity enhancing compounds

They use state-of-the-art laboratory models to generate preclinical data, including 3D culturing of skin cells from fresh, human biopsies. This offers an unprecedented level of personalisation and data collection
The OneSkin founders pride themselves in creating educational content that addresses skin health, aging and overall longevity. OneSkin’s connection and dedication to their customer’s go even deeper than this, as their “customer family” is consistently updated on preclinical results fresh from the lab as well as results from completed clinical trials. This data is presented in a way that helps their customers make key health decisions as well as engage and motivate them to optimise their longevity regimens.
OneSkin’s dedication to democratising longevity goes beyond the individual human, as they are also concerned with the longevity of the planet. This is reflected by their partnerships with Zero Carbon and efforts to use environmentally friendly, green and sustainable packaging and distribution. “We are committed to environmental sustainability and protecting the planet. We constantly aim to reduce our environmental impact while creating cutting-edge, scientifically formulated topical supplements that improve the health, appearance and vitality of the skin”

Funding

As of July 2022, OneSkin has raised a total of US$ 13.3 million from two investment rounds.

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