

## Press Release

**Shiseido finds the effects of lifestyle, including skin care,  
on dermal micro-blood vessels—key to beautiful skin—through twin studies**

Elucidating the skin-body-mind relationship and promoting the evolution of Shiseido's unique beauty algorithms

Shiseido conducted studies in "twins" as a new approach to elucidate the skin, body, and mind relationship in collaboration with the Center for Twin Research at the Osaka University Graduate School of Medicine (hereinafter, Osaka University Twin Research Center), the only institute in Japan that has a systematic research base established for twin studies\*<sup>1</sup>, and achieved the scientific elucidation of the effects of lifestyle\*<sup>2</sup>, including skin care, on the inner skin structure. As a result of analyzing the skin of identical twins using the company's technology to visualize micro-blood vessels in the skin\*<sup>3,4</sup>, it was found that the distribution of micro-blood-vessels varies due to differences in lifestyle, even if the genetic information is the same. Moreover, the investigation of the relationship between micro-blood-vessels and inner skin conditions among twins led to a finding that, when there is a moderately large amount of micro-blood-vessel in the skin, the collagen density inside the skin is high, and the oxygen saturation is high. That the conditions of the skin on the surface change depending on lifestyle has been confirmed previously, but this time, the results obtained verified the possibility that the conditions of the skin on the inside, including the micro-blood-vessels in the skin, can be maintained well by daily skin care and lifestyle.

Through further research, Shiseido will clarify relationships between acquired factors (lifestyle, skin care, eating habits, etc.) and the skin-body-mind relationship, which will be applied to the development of innovative products and care methods to improve skin health.

The results of this study were presented at the 38th Conference of the Japan Society for Twin Studies (2024/1/27).

\*1 A research institute to promote and support twin studies, where a research base for such studies has been established

<https://www.med.osaka-u.ac.jp/pub/twin/en/>

\*2 Acquired effects of skin care, eating habits, exercise, sleep habits, etc., which are not inherent (congenital) in nature

\*3 Shiseido Succeeds in In Vivo Visualization of Dermal Capillaries (2017)

<https://corp.shiseido.com/en/news/detail.html?n=0000000002271>

\*4 Shiseido Succeeds in World-Leading 3D Visualization of capillaries for the Whole Face (2000)

<https://corp.shiseido.com/en/news/detail.html?n=0000000002992>

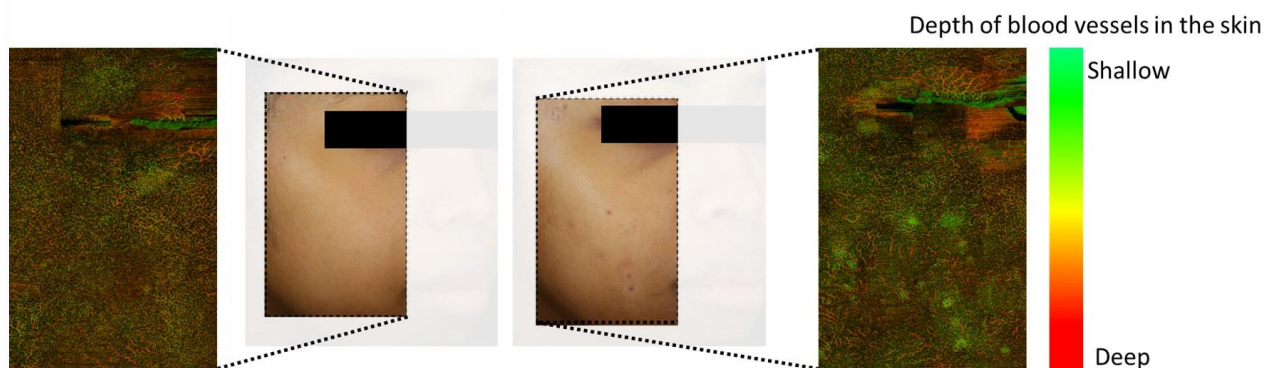


Figure 1. Skin and dermal vasculature of twin girls (sisters) with different lifestyle

Left side: Uniform distribution of blood vessels, right side: Uneven distribution of blood vessels

## Research background

Shiseido has developed various technologies to visualize skin conditions and inner skin parts, such as blood vessels and collagen, and has generated many findings related to skin care. Skin conditions and micro-blood vessels have been suggested to be closely related, but there are complex, intertwined effects of inherent factors as well as lifestyle, and thus, much remains unexplained. Accordingly, in the present study, we worked to clarify the effects of lifestyle and other non-inherent factors on the skin by conducting studies in identical twins.

## Micro-blood vessels in the skin are affected by lifestyle, etc.

Shiseido has discovered through many years of research that the elasticity of the skin is related to micro-blood vessels in the skin<sup>\*5</sup>. Meanwhile, blood vessels in the skin greatly vary between different areas of the face and between individuals, and it has been difficult to determine whether these variations are innate or due to the impact of lifestyle, etc. To tackle this challenge, the present study utilized the measurement technology that we developed for visualizing the entire facial blood vessels without damaging the skin<sup>\*4</sup> to analyze the skin in identical twins. As a result, it became clear that the dermal vascular conditions are different even between identical twins who have been subjected to almost the same innate effects (Figure 1). These findings led us to confirm that the micro-blood vessels in the skin are affected by lifestyle, etc. including skin care.

<sup>\*5</sup> Shiseido Reveals the Relevance of Capillaries in Skin Elasticity (2019) <https://corp.shiseido.com/en/news/detail.html?n=0000000002780>

## Finding the relationship between skin micro-blood vessels and skin conditions

We carried out a further study to investigate the relationship between dermal blood vessels and skin conditions. Investigating the skin of the volunteers registered with the Osaka University Twin Research Center, we found that, among pairs of identical twins, the dermal collagen density was high (Figure 2), and oxygen saturation was high, in the group with a large number of micro-blood-vessels. These results suggested that changes in skin condition are not only due to age and inherent factors, but accumulated effects of lifestyle, including skin care, and other factors also contribute to changes occurring from the inside of the skin, such as micro-blood-vessels and collagen.

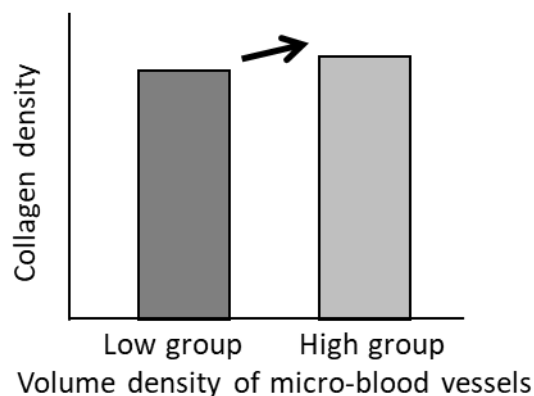


Figure 2. Collagen density is high when there are many micro-blood-vessels

## Future prospects

Based on the results of this study, we will continue to analyze what lifestyle affects the conditions inside the skin and advance our understanding of the skin-body-mind relationship<sup>\*6,7,8</sup>. Through this research, we will discover further the various key elements of beauty, while accelerating our vision for 2030, "Personal Beauty Wellness Company," by making proposals tailored to each individual not only regarding cosmetics but also food, exercise, and sleep.

<sup>\*6</sup> Shiseido, in collaboration with RIKEN, develops novel skin prediction models based on relationships between skin, body, and mind (2023)

<https://corp.shiseido.com/en/news/detail.html?n=0000000003691>

<sup>\*7</sup> Shiseido and Hiroasaki University Graduate School of Medicine Jointly Establish Research Program "Department of Beauty Wellness Science" (2022)

<https://corp.shiseido.com/en/news/detail.html?n=0000000003464>

<sup>\*8</sup> Shiseido and DeNA Life Science Sign Comprehensive Partnership Agreement on Data Analysis (2022)

<https://corp.shiseido.com/en/news/detail.html?n=0000000003529>

## About Our R&D Strategy:

Shiseido's R&D has three pillars that support its R&D strategy: "Skin Beauty INNOVATION," "Sustainability INNOVATION," and "Future Beauty INNOVATION." Underpinned by the "Future Beauty INNOVATION" pillar, the present study was conducted to elucidate the skin-body-mind relationship, the objective of which is to evolve our unique beauty algorithm.

- Integrated Report 2022 (Beauty Innovation)

[https://corp.shiseido.com/report/en/2022/value\\_creation/innovation/](https://corp.shiseido.com/report/en/2022/value_creation/innovation/)

- Keywords

Future Beauty INNOVATION, the skin-body-mind relationship

## <Reference>

### Researchers' challenge

#### ■ R&D Philosophy "DYNAMIC HARMONY" approach

This research was carried out under the Inside/Outside approach of Shiseido's R&D philosophy, DYNAMIC HARMONY. Focusing on the skin-body-mind relationship, we conducted a study with the aim of bringing out the healthy beauty of our consumers from the inside. In addition, we boldly challenged to create new values by combining our strengths with university expertise.

#### ■ The appeal of the complex relationship between the skin, body, and mind

We have been looking at the skin of many people and have developed advanced measurement technologies and theories related to beautiful skin. What we feel strongly through that experience is that the characteristics of the skin and the causes that lead to skin troubles enormously differ from one person to another and are intertwined in a complex way. Even if it is something that "seems to have nothing to do with the skin" at first glance, you will find an unexpected connection if you observe it carefully. Indeed, it is true that "the skin is a mirror that reflects the state of the body and mind." However, scientifically proving the individual relationships is not an easy task—yet this makes the challenge more interesting.

This time, we collaborated with researchers at the Osaka University Twin Research Center, and through observations of twins' skin, we are beginning to uncover various things. Going forward, we hope to continue our challenge so that we will be able to present knowledge and technologies that contribute to the world with a focus on the skin-body-mind relationship, while enjoying its complexity.



Yusuke Hara, Group Manager

## Shiseido's R&D Philosophy "DYNAMIC HARMONY"

- Shiseido Formulates Its Unique R&D Philosophy "DYNAMIC HARMONY" (2021)

<https://corp.shiseido.com/en/news/detail.html?n=0000000003252>

- DYNAMIC HARMONY website:

<https://corp.shiseido.com/en/rd/dynamicharmony>