

## **Shiseido starts research on hair regenerative medicine**

### **Framework agreement on a technical partnership contract with a Canadian bio-venture company “RepliCel”**

On May 16 (Thu), 2013, Shiseido concluded a framework agreement on a collaboration and technology transfer contract with a Canadian bio-venture company RepliCel Life Sciences Inc. (“RepliCel” hereafter), targeting the entire Asian region including Japan with the population of 2.1 billion regarding the introduction of their “hair regenerative medicine technology (RCH-01)”. Shiseido will pay 400 million yen to RepliCel as the contract fee.

Shiseido will combine RepliCel’s hair regenerative medicine technology and Shiseido’s technology and aim to commercialize safe and effective hair regenerative medicine that integrates beauty and medicine to help those concerned about pattern baldness and thinning hair in the next 5 years by also cooperating with specialists in the future.

#### **RepliCel’s hair regenerative medicine technology being adopted by Shiseido**

RepliCel’s patented technology being adopted by Shiseido is the world’s leading hair regeneration technology, the safety of which has been guaranteed by RepliCel’s clinical research together with over 10 years of their basic research. Their core technology is an “autologous cell implantation technology”, in which specific cells<sup>\*1</sup> isolated from the scalp of a patient (concerned about pattern baldness and thinning hair) are replicated and injected into the balding scalp skin in order to rejuvenate damaged hair follicles<sup>\*2</sup> to promote the healthy hair growth in the balding scalp area.

#### **<Specific method>**

- Dissect a piece of scalp tissue containing approximately 20 hair follicles (a circular shape of approximately 5mm in diameter) from the back of the head (non-balding area) of an alopecia patient.
- Only specific hair cells are isolated, and cultured in the proprietary cellular replication process developed by RepliCel. They are then injected (autologous cell implantation) into the patient’s balding scalp skin to promote the growth of healthy hair in the balding scalp skin, improving alopecia and thinning hair.

<Advantages of the technology being adopted by Shiseido>

- 1) Small physical burden during surgeries, etc., due to the fact that there is no need to extract a large scalp area, which is required in hair transplantation surgery.
- 2) There are fewer risks of reactions (immune rejection after implantation, etc.), because the patient's own cells are used in the implantation.
- 3) Compared to hair growth agents, long-lasting effects can be expected from one-shot of procedure.
- 4) Application can be expected regardless of gender

\*1 Cells called "Dermal Sheath Cup Cells", which are thought to be the source of dermal papilla cells that play a major role in promoting hair growth.

\*2 Tissues that surround hair fibre located below pores. They consist of various kinds of cellular tissues that produce hair fibres and are the part that supports hair shaft.

Current state of solutions for alopecia/thinning hair

Pattern baldness and thinning hair-related market scale, including hair implantation, wigs, hair growth support, and hair growth agents (medicated products and quasi-drugs), etc. is estimated<sup>\*2</sup> to be as large as approximately 200 billion yen<sup>\*3</sup> in Japan alone.

In addition, new measures, such as oral intake of drugs with an androgen suppression effect, have been promoted in medical institutions in recent years. They have also been promoting the development of new technologies, such as injection of growth factors for hair cells into scalps, etc. On the other hand, there is also the issue that these oral treatment drugs cannot be applied to women.

\*3 Yano Research Institute Ltd in 2012.

What is regenerative medicine?

Regenerative medicine is a method that treats illness, which cannot be responded to with existing treatment, through self-regeneration functions by implanting human origin tissues/cells. There are roughly 2 types, including "autologous cell implantation", which utilizes cells belonging to the patient him/herself, and "allogeneic cell implantation", which utilizes cells belonging to another person. The technology being introduced from RepliCel is also the autologous cell implantation technology, which has become the mainstream technology from the perspectives of safety and avoiding side effects of immune rejection, etc.

The domestic market scale of regenerative medicine is currently said to be approximately 9 billion yen. A committee of the Ministry of Economy, Trade and Industry expects that it will grow to become a 2.5 trillion yen scale by 2050, which is 278 times the current scale. Currently, the diet is promoting the considerations for the establishment of laws in preparation for the development of regenerative medicine and revision of the Pharmaceutical Affairs Act to accelerate the screening/marketing of medical equipment in the field of medicine, which is one of the "growth strategies" of the government. Shiseido will also promote a full-scale entry in this field, which expects extremely high growth.

### Shiseido's involvement with hair growth

Shiseido was established in 1872 as Japan's first Western-style pharmacy. We have also worked on hair research ever since the beginning, as seen in the examples of "Hanatsubaki (Camellia) hair oil" in 1898 and the hair tonic "Flowline" in 1915, etc. by using our origin in pharmacology as the advantage. We released "Medicated Flowline" in 1982 and "Medicated Adenogen" with a biogenic substance "adenosine" in 2005, and "THE HAIR CARE ADENOVITAL SCALP ESSENCE" became a huge hit in the entire Asian region, recording the sales of over 1 million bottles<sup>\*4</sup> in 1.5 years after the release in February of 2011. Shiseido has also been promoting scalp and hair biology research from genetic and cellular levels in many years, and this area has become one of our strongest expertise.

\*4 on a shipment basis

### About RepliCel

Company name: RepliCel Life Sciences Inc.

[www.replicel.com](http://www.replicel.com)

Location: Vancouver, Canada

Capital: 21,158 Canadian dollars (As of December 31, 2012)

Representative: David Hall, President, CEO and Director

Business description: Research and development of regenerative medicine. This is a venture company for the research and development of hair and tendon regenerative medicine (cellular medicine) with the purpose of licensing the results of research and development to business companies. RepliCel itself specializes in research and has no business operation in the applicable area.

Establishment: Although they changed to the current name and business contents in 2011, its origin is Newcastle Resources Ltd., which was established in 1967.