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New Policy of Research and Development of Organ Bud Technology

HEALIOS K.K. (“Healios”) has been reviewing its strategies from a long-term perspective in order to optimize its business structure and progress. In order to accelerate the research and development of organ bud technology^{*1} in the field of iPSC regenerative medicine, Healios announces that it has decided to carve-out this technology from the company.

We have been conducting research for the development of therapeutic methods using organ bud technology (development code: HLCL041) that create functional three-dimensional human organs. Liver buds are formed by mixing and culturing hepatic progenitor cells, mesenchymal stem cells, and vascular endothelial cells for connecting cells and creating blood vessels. We have advanced research evaluating the function and quality standards of these constituent cells and the organ bud end product. Since April 2022, we have been working with the Division of Regenerative Medicine of the Institute of Medical Science at the University of Tokyo, to establish a method for inducing differentiation of liver buds using UDCs^{*2} and to develop a highly efficient and scalable cell culturing and mass manufacturing system. In addition, in 2018, we established our consolidated subsidiary, Organoid Neogenesis Laboratory Inc., and have been studying the practical application of this technology from a multifaceted perspective as a platform technology not limited to the liver field.

As mentioned above, we have been conducting basic research on organ buds to advance their practical use with our own company resources and through joint research partners, however in order to efficiently allocate our management resources, we plan to carve out this technology from our company and continue to promote ongoing research and development jointly with external partners including venture capital funds. At this point, the specific implementation scheme has not been finalized.

This announcement does not have a material impact on our consolidated financial results for the current fiscal year. We will promptly make an announcement on any matter that requires disclosure in the future.

*1 Organ bud technology

Organ bud technology was developed from the idea of mimicking the process of organ formation by cells that come together in the womb. This is a novel cell culture manipulation technology that artificially creates three-dimensional organs (organ buds) that are the basis of organs by culturing three types of cells (tissue progenitor cells, vascular endothelial cells, and mesenchymal cells) together. This technology has succeeded in creating three-dimensional organs not only for the liver but also for various organs such as the pancreas, kidneys, intestines, lungs, heart, and brain. In October 2014, we signed an exclusive worldwide patent license agreement for this technology from Yokohama City University.

Currently, organ transplantation is an extremely effective treatment for organ failure in which organs do not function properly. However, the supply of donor organs is insufficient to meet the growing need for organ transplantation, and this technology offers the potential for a new treatment concept that can rescue many patients as an alternative treatment to organ transplantation.

*2 UDCs

UDCs are iPS cells created using gene-editing technology that allows them to avoid and / or reduce the body's immune rejection response. The production of Healios' UDCs involves the removal of certain HLA genes that elicit a rejection response, the introduction of an immunosuppression gene to improve immune evasion, and the addition of a suicide gene serving as a safety mechanism, each in an allogeneic iPS cell. This next-generation technology platform allows for the creation of regenerative medicine products with enhanced safety and a lower risk of immune rejection, while preserving the inherent ability of iPS cells to replicate themselves continuously and their pluripotency in differentiating into various other kinds of cells.

■About Healios K.K.

Healios is Japan's leading clinical stage biotechnology company harnessing the potential of stem cells for regenerative medicine. It aims to offer new therapies for patients suffering from diseases without effective treatment options. Healios is a pioneer in the development of regenerative medicines in Japan, where it has established a proprietary, gene-edited "universal donor" induced pluripotent stem cell (iPSC) line to develop next generation regenerative treatments in immuno-oncology, ophthalmology, liver diseases, and other areas of severe unmet medical need. Healios' lead iPSC-derived cell therapy candidate, HLCN061, is a best-in-class, next generation NK cell treatment that has been functionally enhanced for superior efficacy in solid tumors. Its late-stage pipeline includes the somatic stem cell product HLCM051, which has been evaluated in Japan in Phase 2/3 and Phase 2 trials in ischemic stroke and acute respiratory distress syndrome (ARDS), respectively. Healios was established in 2011 and has been listed on the Tokyo Stock Exchange since 2015 (TSE Growth: 4593). <https://www.healios.co.jp/en>