

PRESS RELEASE

OrganTech Launches the World's First Tension-Loaded Three-Dimensional Human Skin Model

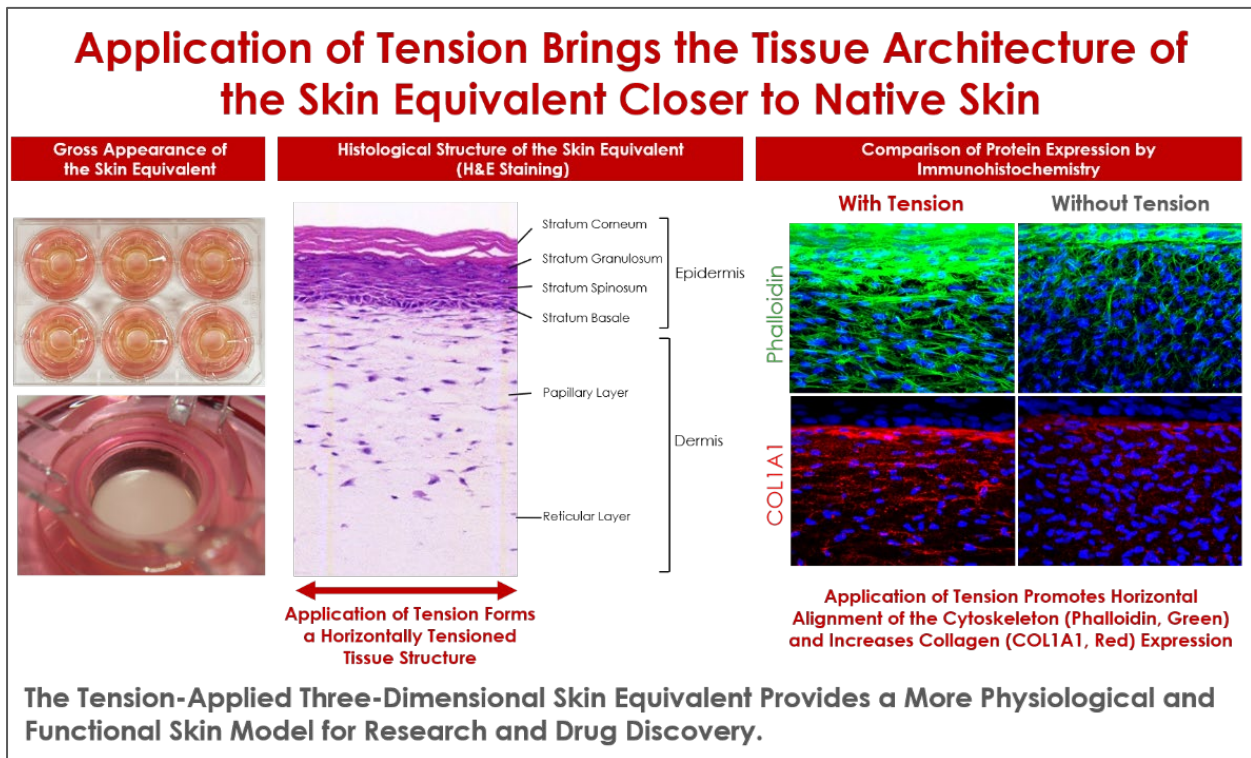
Advancing Next-Generation Non-Animal Testing Through a More Physiologically Relevant Human Skin Model

TOKYO, Japan — OrganTech, Inc. ("OrganTech"), a biotechnology company advancing regenerative medicine through its proprietary **Organ Regeneration Technology** platform, today announced the commercial launch of **RepliSkin 3D™**, the world's first **tension-loaded three-dimensional human skin model** engineered to reproduce the physiological mechanical tension inherent to native human skin.

The launch builds on OrganTech's **August 27, 2025** announcement that it had licensed its proprietary three-dimensional human skin technology to **Kohjin Bio Co., Ltd.** Under a technology transfer and patent licensing agreement, OrganTech's manufacturing technology has now been translated into **RepliSkin 3D™**, a commercially available product manufactured and distributed by Kohjin Bio.

RepliSkin 3D™ is the first commercially available three-dimensional human skin model designed to maintain physiological mechanical tension throughout *in vitro* culture. By more faithfully recreating the biomechanical environment of native skin, the model provides researchers with a human-relevant evaluation platform for **non-animal testing** across pharmaceutical development, cosmetic science, chemical safety assessment, and regenerative medicine research.

The launch addresses growing global demand for advanced human tissue models that can improve the predictive value and translational relevance of *in vitro* research while accelerating the shift toward ethical, reproducible, and scientifically rigorous alternatives to animal experimentation.



Recreating Native Skin Through Tissue-Scale Mechanical Tension

OrganTech's proprietary human skin engineering platform represents the culmination of decades of research in three-dimensional organ regeneration led by **Dr. Takashi Tsuji**, Founder of OrganTech.

By integrating the Company's expertise in cell-cell interactions, tissue morphogenesis, developmental biology, and three-dimensional tissue engineering, OrganTech has developed a human skin model designed to reproduce the architecture and physiological behavior of native tissue with greater fidelity.

Conventional reconstructed skin models commonly contract during *in vitro* culture, disrupting the mechanical environment needed to preserve key characteristics of native skin. **RepliSkin 3D™**, by contrast, maintains physiological mechanical tension throughout tissue development.

This controlled biomechanical environment supports the formation of well-organized epidermal and dermal layers while preserving tissue-scale mechanical homeostasis. The resulting construct more closely reflects the structural integrity and physiological functions of native human skin, creating a more biologically relevant foundation for research and product evaluation.

The scientific foundation for this technology was reported in the peer-reviewed journal

Communications Biology (Nature Portfolio) in 2020. The study demonstrated that tissue-scale tensional homeostasis is a critical regulator of normal skin architecture and physiological function.*³

In recognition of its scientific originality and commercial potential, the technology received the **Outstanding Award** at the **30th SME New Technology and New Products Awards** in 2020.*⁴

Advancing the Global Shift Toward Non-Animal Testing

The global life sciences industry is undergoing a fundamental transition toward research methods that are more predictive of human biology, more reproducible, and more ethically responsible.

Across the pharmaceutical, cosmetic, and chemical sectors, companies are seeking advanced *in vitro* human tissue models that can improve the predictive value of preclinical studies, strengthen translation to human outcomes, and reduce reliance on animal experimentation.

This transition is being propelled by scientific progress and an evolving regulatory landscape. The European Union has prohibited animal testing for cosmetic products, while regulatory authorities and research organizations in the United States and other countries continue to promote the development and adoption of **Non-Animal Testing (NAT)** methodologies.

Concurrently, the internationally recognized **3Rs Principle—Replacement, Reduction, and Refinement**—has become a global framework for advancing scientifically sound and ethically responsible research.

Against this backdrop, OrganTech believes that human tissue models capable of reproducing native tissue architecture, mechanics, and function will become essential platforms for next-generation drug discovery, cosmetic science, toxicology, disease modeling, and regenerative medicine.

RepliSkin 3D™ was developed to address these scientific and regulatory priorities by providing researchers with greater physiological relevance, robust experimental reproducibility, and enhanced translational potential.

Looking Ahead

The commercial launch of **RepliSkin 3D™** marks a major milestone in OrganTech's strategy to translate proprietary regenerative science into scalable technologies that deliver meaningful value to researchers, industry partners, and society.

Beyond its immediate application in non-animal testing, OrganTech expects physiologically relevant human tissue models to play an expanding role in drug discovery, safety assessment, disease modeling, precision medicine, and regenerative medicine.

By combining scientific innovation with strategic partnerships, technology licensing, and global collaboration, OrganTech aims to accelerate the practical application of regenerative medicine and advance biomedical research that is more predictive, sustainable, and closely aligned with human biology.

■Notes

*1 Organ Regeneration Technology

Nearly all organs form only once during embryonic development from an organ germ, a primordial structure composed of epithelial and mesenchymal stem cells. During organogenesis, these cell populations interact through precisely coordinated molecular signaling pathways to generate mature, fully functional organs.

In 2007, Takashi Tsuji, founder of OrganTech, became the first researcher in the world to reconstruct an organ germ by isolating epithelial and mesenchymal stem cells and recombining them at high cell density within a defined three-dimensional compartment. First reported in *Nature Methods* (2007), this breakthrough technology—the **Organ Germ Method**—has enabled OrganTech to demonstrate functional regeneration across multiple organs and tissues, including teeth, hair follicles, salivary glands, and lacrimal glands, establishing a platform for next-generation regenerative medicine.

*2 Patent

Container and Manufacturing Method for Producing a Tension-Loaded Three-Dimensional Human Skin Model

Japanese Patent No. 7705619

*3 Scientific Reference

Kimura S., et al. "Tissue-scale tensional homeostasis in skin regulates structure and physiological function."

Communications Biology (Nature Portfolio), 2020.

*4 Recognition

Outstanding Award

30th SME New Technology and New Products Awards
(General Division)

■ About OrganTech, Inc.

OrganTech, Inc. is a Japan-based biotechnology company developing proprietary platform technologies for regenerative medicine.

The Company's core technology, the **Organ Germ Method**, recreates key developmental processes involved in organ formation and has enabled the functional regeneration of complex organs and tissues.

Building on this scientific platform, OrganTech is advancing research, clinical development, and commercialization in three principal areas:

- **Hair Regeneration**
- **Bio-hybrid Tooth**
- **Three-Dimensional Human Skin Models**

Through strategic partnerships, technology licensing, and global collaboration, OrganTech aims to translate breakthrough science into practical solutions that improve human health and quality of life.

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