
PRESS RELEASE

ProBioGen grants a license for human lymph node technology to TissUse for Multi-Organ-Chip applications

Berlin, Germany, June 15, 2017: ProBioGen AG and TissUse GmbH have signed a license and cooperation agreement to integrate ProBioGen's Human Artificial Lymph Node Model into the Multi-Organ-Chip technology of TissUse. With the Lymph Node Model direct effects of substances on the human immune system can be monitored. The Multi-Organ-Chip technology emulates multiple interacting human organs on a device, not larger than a microscope slide, to imitate the complex processes in the human organism over periods of up to two months. This technology is envisioned to explore how the human organism reacts to new medicines, cosmetic substances or chemicals without expensive animal testing. TissUse now licenses the patented Lymph Node Technology Platform (HuALN) from ProBioGen and thereby expands the range of applications of Multi-Organ-Chip technology to predictions of immune reactivity in interaction with other organs.

"The combination of ProBioGen's unique HuALN model and our human Multi-Organ-Chip technology will in future initially allow for the analysis of immunological reactions of human organs on active substances. Disease mechanisms in systemic autoimmune diseases, allergies and anti-tumoral reactions will be elucidated with such Multi-Organ-Chip systems," explains Dr Uwe Marx, CEO of TissUse.

"This partnership will bring together two highly motivated teams with a wide scope of experience and comprehensive know-how. We look forward to a fruitful collaboration increasing the scope of applications for our artificial lymph node system to allow its use for even broader pharmaceutical applications," says Dr Wieland Wolf, chairman of ProBioGen.

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About TissUse GmbH www.tissuse.com

TissUse is a vibrant Berlin, Germany-based, growth company which has developed a unique "Multi-Organ-Chip" platform that - for the first time ever - provides preclinical insight on a systemic level using human tissue. This enabling technology platform consists of a miniaturized construct that closely simulates the activity of multiple human organs in their true physiological context. TissUse's Multi-Organ-Chips provide a completely new approach to predict, for example, toxicity, ADME profiles and efficacy in vitro, reducing and replacing laboratory animal testing and streamlining human clinical trials.

TissUse is additionally applying its platform and know-how to develop spin-off programmes in a variety of tissue and organ repair areas, starting with the cosmetic market of hair transplants.

About ProBioGen AG www.probiogen.de

ProBioGen is a specialist in the development and manufacturing of complex therapeutic glycoproteins. Combining state-of-the-art development platforms together with intelligent product-specific technologies yields biologics with optimised properties.

Rapid and integrated cell line and process development, comprehensive analytical development and reliable GMP manufacturing is performed by a highly skilled and experienced team. All services and

technologies are embedded in a total quality management system to assure compliance with international ISO and GMP standards (EMA/FDA).

ProBioGen has been operational for more than 20 years and is based in Berlin, Germany.

About the Human Artificial Lymph Node (huALN) Model

The proprietary and unique Human Artificial Lymph Node Model (HuALN) was developed by ProBioGen as superior 3D micro-organoid model for analysing substance effects on the human immune system in vitro. It is based on a patented, miniaturised and perfused bioreactor for the long-term cultivation of immune cells. Human blood-derived dendritic cells, T and B lymphocytes and mesenchymal stem cell-derived stromal cells are inoculated into the bioreactor's 3D hydrogel matrix, which is perfused with cell culture medium and aerated, just as in a real human lymph node. Upon antigen-stimulation, the cells self-organise into immune-competent micro-organoid structures within the 3D matrix. The perfused bioreactor is typically operated for four weeks and, thus, allows multiple and repeated exposure of the immune cells to the test compounds.

This innovative technology predicts drug-related effects - wanted or unwanted - on the human immune system. The HuALN Model allows the specific investigation of immunofunction, such as immunomodulation, immunogenicity and immunotoxicity, in vitro. A broad range of substance classes, from small molecules, proteins and peptides to nucleic acids, can be tested, covering biopharmaceuticals, vaccines and cosmetics.

The read-outs are on the T and B cell level, looking specifically at cytokine profiles, cell surface makers, cell proliferation, IgM and IgG secretion, anti-drug antibodies (ADA formation) and functional cell tests.

The huALN technology is offered by ProBioGen as a service and can be licensed to third parties.

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