PRESS RELEASE
Phase Holographic Imaging PHI AB (publ)
Lund, December 6, 2018

# Lund University and PHI partner to develop novel 3D cell culturing methods for immunotherapy research

**Based on PHI's current HoloMonitor technology, the Department of Immunotechnology at Lund University and Phase Holographic Imaging (PHI) recently agreed to jointly develop novel 3-dimensional cell culturing methods to meet the urgent need for such methods. In a counter purchase agreement, PHI obtains onco-immunological expertise and the right to market developed methods. By purchasing scientific instrumentation and software from PHI, the department obtains access to PHI's HoloMonitor technology.**

The toxins used when treating cancer with chemotherapy act by being more toxic to the more metabolically active cancer cells than to the less active non-cancerous body cells. Metastatic cancer arises from small colonizing tumors. Unlike larger tumors, these microtumors lack the blood vessels supplying oxygen and nutrients needed for rapid cell division and elevated metabolic activity, making microtumors less susceptible to conventional chemotherapy. As a result, it is today still very difficult to treat metastatic cancer.

As highlighted by this year's Nobel Prize in physiology or medicine, immunotherapy has the potential to radically improve cancer treatment. Instead of poisoning both cancer cells and normal cells, immunotherapies aim to stimulate the patient's own immune cells to specifically seek out and kill every single cancer cell, regardless of their metabolic activity. However, to fulfill this promise, cancer researchers need new laboratory methods to efficiently grow and non-invasively study 3-dimensional microtumors in large quantities, taking cancer research beyond the current practice of 2-dimensional cell cultures. Various market reports value the rapidly growing global 3D cell culture market to 600 – 1 400 million USD annually, with an expected compound annual growth rate (CAGR) of 15 – 35 %.

Contrary to conventional techniques, as confocal microscopy and flow cytometry, PHI's holographic technology has the ability to non-invasively characterize the internal 3-dimensional structure of living microtumors, making PHI’s core technology well adept to non-destructively monitor the growth and health status of laboratory cultured microtumors.

For additional information, please contact:
Peter Egelberg, CEO
Tel: +46 703 19 42 74
E-mail: ir@phiab.se
Web: www.phiab.se

## REFERENCES


- 3D Cell Culture Market by Product, Application, End User- Global Forecast to 2022, MarketsAndMarkets (2017)
- 3D Cell Culture Market Size, Share & Trends Analysis Report By Technology, By End Use, By Application, By Culture Component, And Segment Forecasts 2018 - 2024, Grand View Research (2018)
- 3D Cell Culture Market Research Report – Forecast to 2023, Market Research Future (2018)
- 3D Cell Cultures: Technologies and Global Markets, BCC Research (2017)
- Digital holographic microscopy for longitudinal volumetric imaging of growth and treatment response in three-dimensional tumor models, Journal of Biomedical Optics (2014)


## ABOUT THE DEPARTMENT IMMUNOTECHNOLOGY

The focus of the Department of Immunotechnology spans from advanced technology developments to bio-medicine research. The main research areas are oncology, allergy, autoimmunity, neurobiology, and antibody engineering. The department employs advanced technologies including genomics and transcriptomics, large-scale mass spectrometry-based proteomics, different types of microarray technologies (affinity proteomics), phage display, and associated bioinformatics. In addition, the department provides genomics and proteomics services, and an antibody development platform that has been integrated into SciLifeLab's Drug Discovery and Development Platform. The department is also responsible for several student courses and it is of particular priority to offer high quality education at undergraduate and postgraduate level.

## ABOUT PHI

Phase Holographic Imaging (PHI) leads the ground-breaking development of time-lapse cytometry instrumentation and software. With the first instrument introduced in 2011, the company today offers a range of products for long-term quantitative analysis of living cell dynamics that circumvent the drawbacks of traditional methods requiring toxic stains. Headquartered in Lund, Sweden, PHI trades through a network of international distributors. Committed to promoting the science and practice of time-lapse cytometry, PHI is actively expanding its customer base and scientific collaborations in cancer research, inflammatory and autoimmune diseases, stem cell biology, gene therapy, regenerative medicine and toxicological studies.