## Automating Cell Biology

COMPANY PRESENTATION September 2015

Phase Holographic Imaging www.phiab.se



## Holographic Time-lapse Cytometry

### WHAT IS CELL CULTURE?

- Experiments using cultured cells is the cornerstone of drug development and preclinical research
- Such experiments are the only opportunity to work on human cells before clinical trials
- In specialized cell laboratories, cells are artificially cultured in plastic containers inside a cell incubator



Cell culturing in a cell incubator





Cell culture preparation



- Cultured cells are studied using cell analysis, often after treating the cells with a drug
- Cells are traditionally analyzed when dying or dead due to toxic stains
- New technology allow living cells to be <u>observed</u> and <u>measured</u> without toxic stains



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Intoxicated humans do not display their natural behavior. The same applies to their building blocks – cells

#### MARKET OPPORTUNITY



#### End-point cell analysis

• Single observation at the end of the experiment



- One cell culture  $\rightarrow$  one data point
- Analysis of dead cells



#### Time-lapse cell analysis

- Multiple observations during the entire experiment
- One cell culture  $\rightarrow$  multiple data points
- Analysis of living cells



Time-lapse cytometry allows cell based preclinical research to transition from end-point to time-lapse cell analysis



#### HOLOMONITOR® M4



- Over 45 units in operation with customers and key opinion leaders
  - Harvard and Northeastern University, Boston
  - University of California, San Francisco
  - Israel Institute for Biological Research
- After customer feedback several pilot builds have been manufactured
- Production will move into series production in Q3 2015
- Motorized stage launched in 2015
- End customer price: €30 000

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The HoloMonitor platform offers unique 4dimensional imaging capabilities that greatly enhance our understanding of both functions, which was previously unachievable by other technologies.

Ed Luther, Northeastern University, Boston





#### "Cell Analysis Flourishes Scientifically, Prospers Commercially" Genetic Engineering and Biotechnology news, 2015

"The global market is estimated to be valued at \$8.7 billion USD in 2013 and will grow at a CAGR of 11.1% from 2013 to 2018" Cell-based Assays Market by Product, Application, End-user – Markets & Markets, 2014

Estimated number of labs performing cell analysis worldwide = 126 804 The Market for Cell-based Assays, Bioinformatics – gene2drug.com, 2015



Markets & Markets, 2014

- Cancer research
- Immunotherapies
- Stem cell therapies
- Toxicology

- 1. Establish HoloMonitor technology through
  - Initial sales in key markets: US, Germany, Switzerland, UK, Japan and China
  - Collaborations with key opinion leaders
- 2. Expand use of technology through Centers of Excellence in life science hotspots
  - Boston, San Diego, San Francisco
  - London, Basel, Heidelberg and Tokyo
- 3. To create visibility in the US, establish direct presence in the Boston area
- 4. Seek global distribution through major life science tools companies
- 5. Divest business when substantial market traction has been achieved

#### ACHIEVEMENTS



- Soon over 50 units in <u>operation</u> at customers and key opinion leaders
- Series production with capacity of over 1 000 units/year
- Distribution in USA, China and other key markets
- Collaboration with 8 key opinion leaders
- Sales in 2014/15: 2.7 (1.4) MSEK
- Center of Excellence in Boston
- Over 30 scientific publications
- 2 registered trademarks
- 12 granted patents
- 11 employees



HoloMonitor is contract manufactured in Skellefteå

# Pholographic Imaging

Time-lapse cytometry for biologists, by biologists

# Thank You

www.phiab.se