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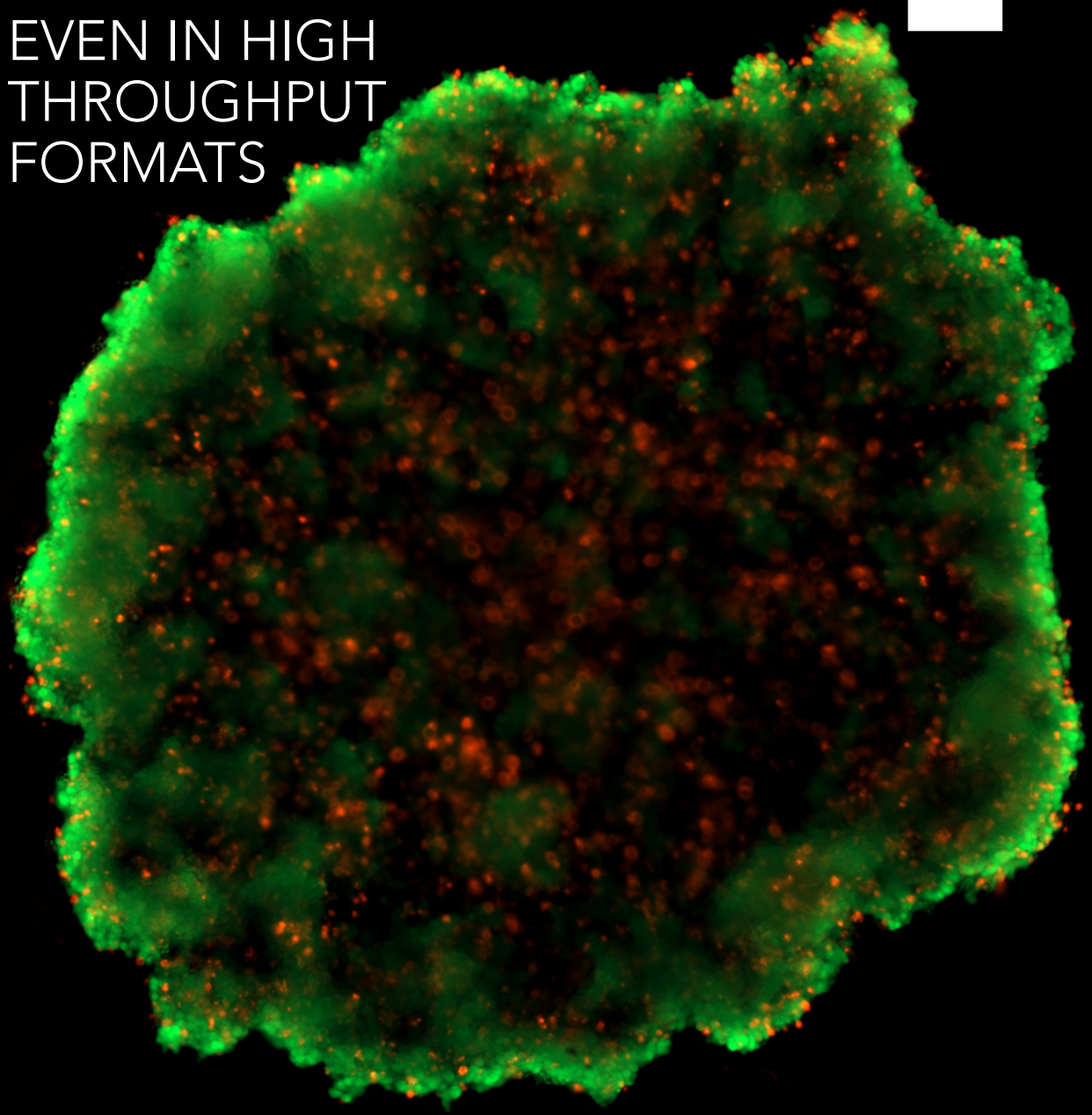
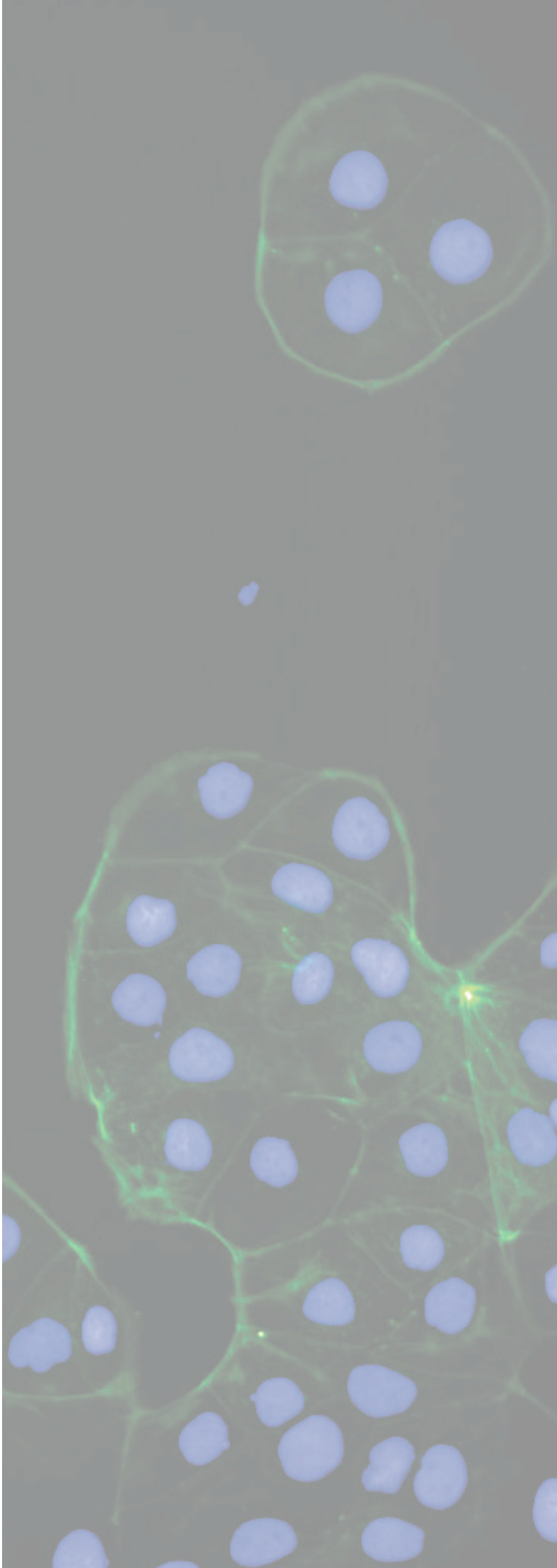
HIGH CONTENT MEASUREMENTS EVEN IN HIGH THROUGHPUT FORMATS



BECAUSE RESOLUTION MATTERS



SYNENTEC GMBH HAS MORE THAN A DECADE OF EXPERIENCE AND EXPERTISE IN THE FIELD OF BIOLOGICAL IMAGING

We know that time is an increasingly scare resource these days. Therefore, we develop automated high throughput cell culture microscopes.

CELLAVISTA® and **NYONE®** offer comprehensive imaging and analytical solutions to answer your individual cell culture questions in a fast and user friendly way. Our **YT® - IMAGE ANALYSIS SOFTWARE** is constantly being expanded with new applications.

Our products are extensively used and accepted as reliable and valuable solutions in the field of cell line development, cell and gene therapy, stem cell research and in scientific research.

All of our products are designed and manufactured in-house and we provide excellent application support, quick technical service and customised product demonstrations.

HIGH CONTENT IMAGING FASTER THAN EVER BEFORE

The development of new drugs and biopharmaceuticals will turn the science of today into the medicine of tomorrow. This requires a precise experimental implementation from researchers and manufacturers. All steps to achieve that goal are associated with high time pressure and a lot of time consuming assay work – in a very broad range of applications.

We provide innovative methods and technologies to help you reach your R&D goals. Our automated cell imagers provide the highest picture quality amongst cell imaging systems on the market.

WHO WE ARE – OUR HISTORY

SYNENTEC was founded in 2005 by a team of german engineers with extensive experience within the areas of research for drug discovery, high content screening and bioprocessing. Meanwhile the company consists of an interdisciplinary team of engineers, software developers, biologists and many helping hands.

Our goals were to develop technologies and analysis solutions in a customer centric way to address some of the more challenging applications that researchers in cell biology were facing and provide them with products to solve these challenges by enabling them to perform automated cell imaging applications that they thought were not technologically possible within the reach of their research budget.

By working closely with hundreds of customers who face different challenges in research and manufacturing for over a decade has enabled us to gain extensive insight in not only developing a considerable portfolio of cell imaging applications, but also extensive experience in providing customers with solutions for extremely challenging cell imaging projects. This continually leads to many valuable innovations in our imaging and software solutions.

AUTOMATED CELL IMAGING IS OUR FOCUS

CELLAVISTA

High content measurements even in high throughput formats CELLAVISTA® is a fully automated cell imager designed for the characterisation of cells as an integral step of your research, development and production process.

It is a non-invasive imaging system using brightfield and fluorescence detection with multiwell plates, chamber slides or RoboFlasks, for a broad range of cellular applications in cell line development, cellular research and drug discovery.

CELLAVISTA® is the robust partner for imaging in automated environments, engineered to be integrated and your workhorse in cell imaging.

NYONE

Designed as the smaller edition of CELLAVISTA®. This fully automated cell imager is characterised by it's mechanical robustness, optical quality and functional balanced features. You will very quickly recognise that NYONE® is as a reliable member for your research team.

If you run your applications in medium throughput then the NYONE® is the perfect choice to save money and bench space. With up to about 100 plates per 10 hours, NYONE® fits ideally for Trypan Blue viability monitoring, confluence determination, single cell cloning etc.

NYONE® Scientific is SYNENTEC's latest development geared towards the aqcuisition of high content images, develeoped without one single compromise in image quality.

MAKES YOUR RESEARCH EVEN MORE EFFICIENT

CELLAVISTA® combines approved brightfield capabilities with innovative fluorescence optics. CELLAVISTA® is able to deal with a bulk of microplates in a very short time delivering your results utilising high resolution images. A wide range of achievable resolutions makes it an ideal tool for research as well as high throughput screening.

CELLAVISTA

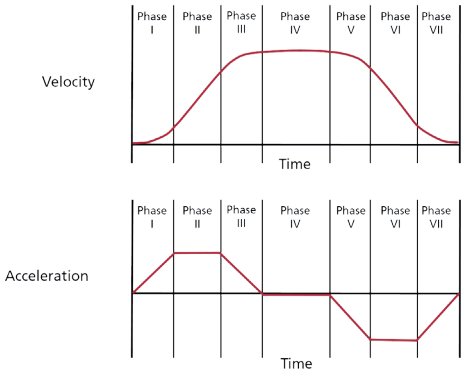
...ENGINEERED BY SYNENTEC

SPECIAL FEATURES

- ✓ Laser autofocus system
- ✓ Image analysis during measurement and viewing
- ✓ Combination of brightfield and fluorescence analysis
- ✓ Automation friendly design

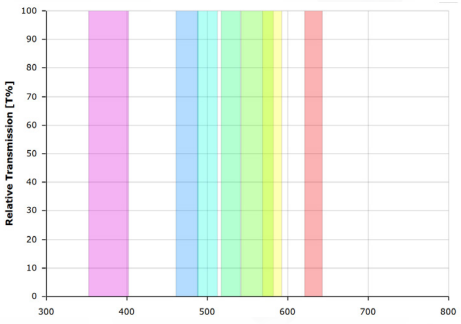
INNOVATIVE MOTION CONTROL

Harmonic drive at full speed for a gentle cell handling.

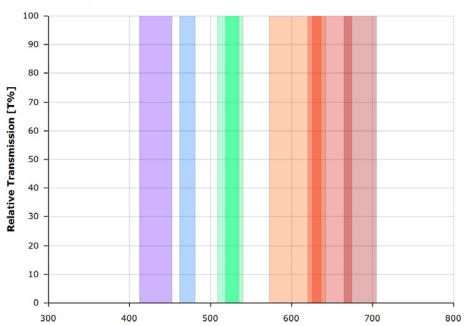


Ultrafast imaging without agitation during plate scan.

6 FLUORESCENCE CHANNELS

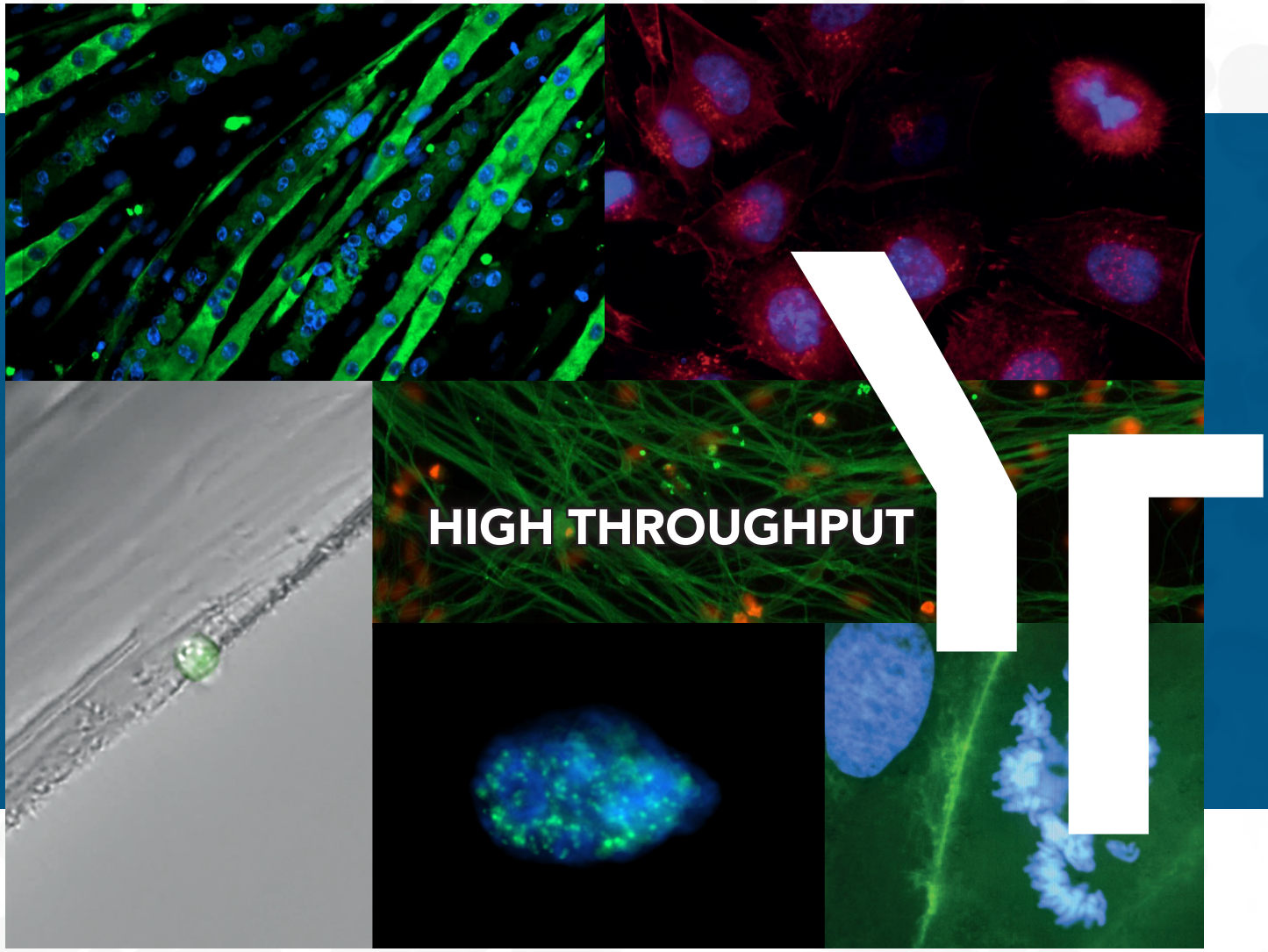


EXCITATION



EMISSION

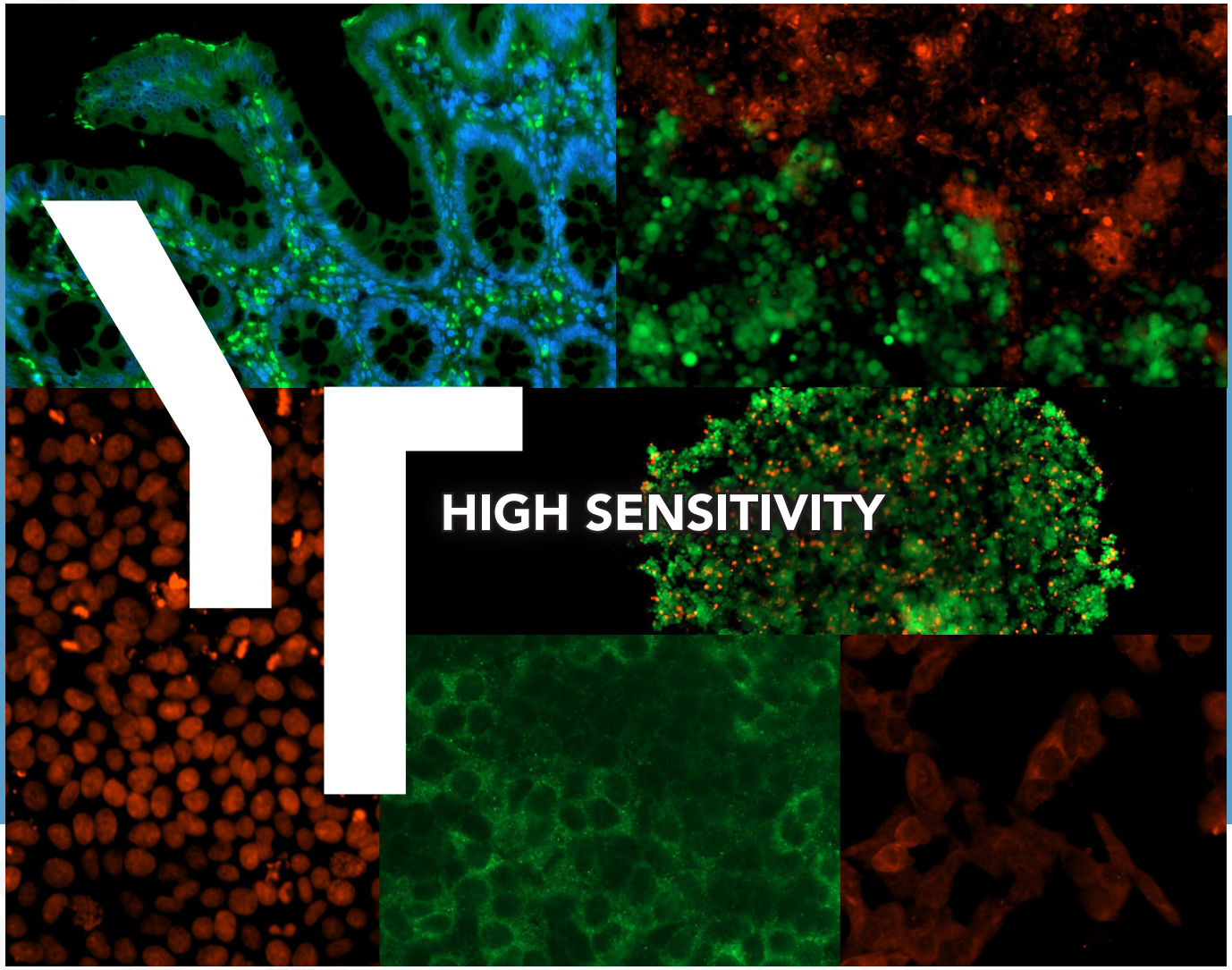
CELLAVISTA 4
A HARMONY OF SPEED AND RESOLUTION



YOUR BENEFITS OF THE NEW CELLAVISTA

- ✓ Improved harmonic motion for imaging without agitation during plate scan
- ✓ Ultrafast multiplex imaging
- ✓ Redesigned highly sensitive fluorescence optics
- ✓ HCS-grade lenses
- ✓ 3 times more sensitive: shorter exposure times, faster measurements (high throughput), less bleaching
- ✓ Autofocus performance twice as fast as previous model
- ✓ Automation ready design for easy integration

NYONE SCIENTIFIC
HIGH CONTENT SCREENING MADE SIMPLE



YOUR BENEFITS OF THE NEW NYONE

- ✓ Improved harmonic motion
- ✓ Small footprint
- ✓ 16-bit high content imaging without compression
- ✓ Highly sensitive fluorescence optics
- ✓ HCS-grade lenses
- ✓ 3 times more sensitive: shorter exposure times, faster measurements (high throughput), less bleaching
- ✓ Autofocus performance twice as fast as previous model

DYNAMIC RANGE AND PRECISION

NYONE® SCIENTIFIC combines approved brightfield capabilities with innovative fluorescence optics utilizing cutting edge sCMOS technology. NYONE® SCIENTIFIC is able to deal with lowest signals due to innovations in camera technology delivering your results in high content 16-bit images. The high dynamic range and low read noise make NYONE® SCIENTIFIC your trusted partner for high content screening in high throughput.

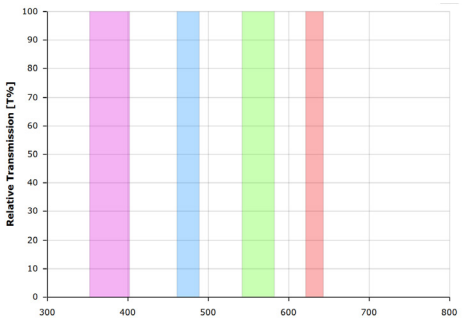
NYONE SCIENTIFIC ...ENGINEERED BY SYNENTEC

SPECIAL FEATURES

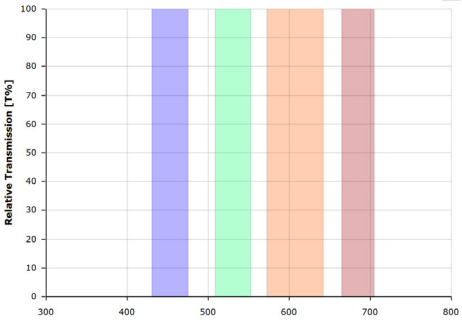
- ✓ 16-bit imaging
- ✓ Laser autofocus system
- ✓ Image analysis during measurement and viewing
- ✓ Combination of brightfield and fluorescence analysis
- ✓ Small footprint

4 FLUORESCENCE CHANNELS

EXCITATION

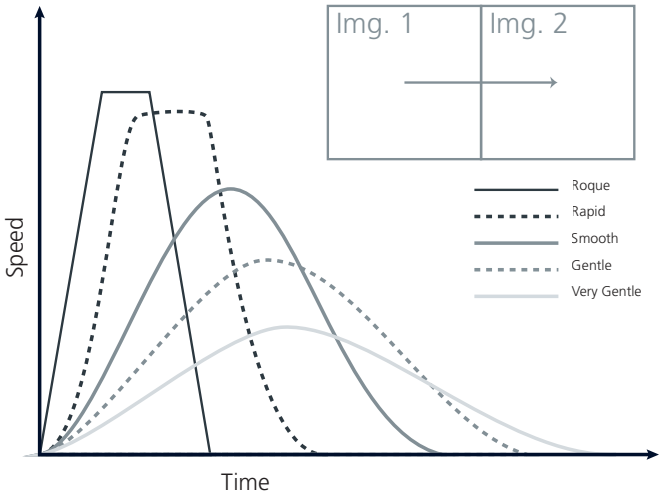


EMISSION



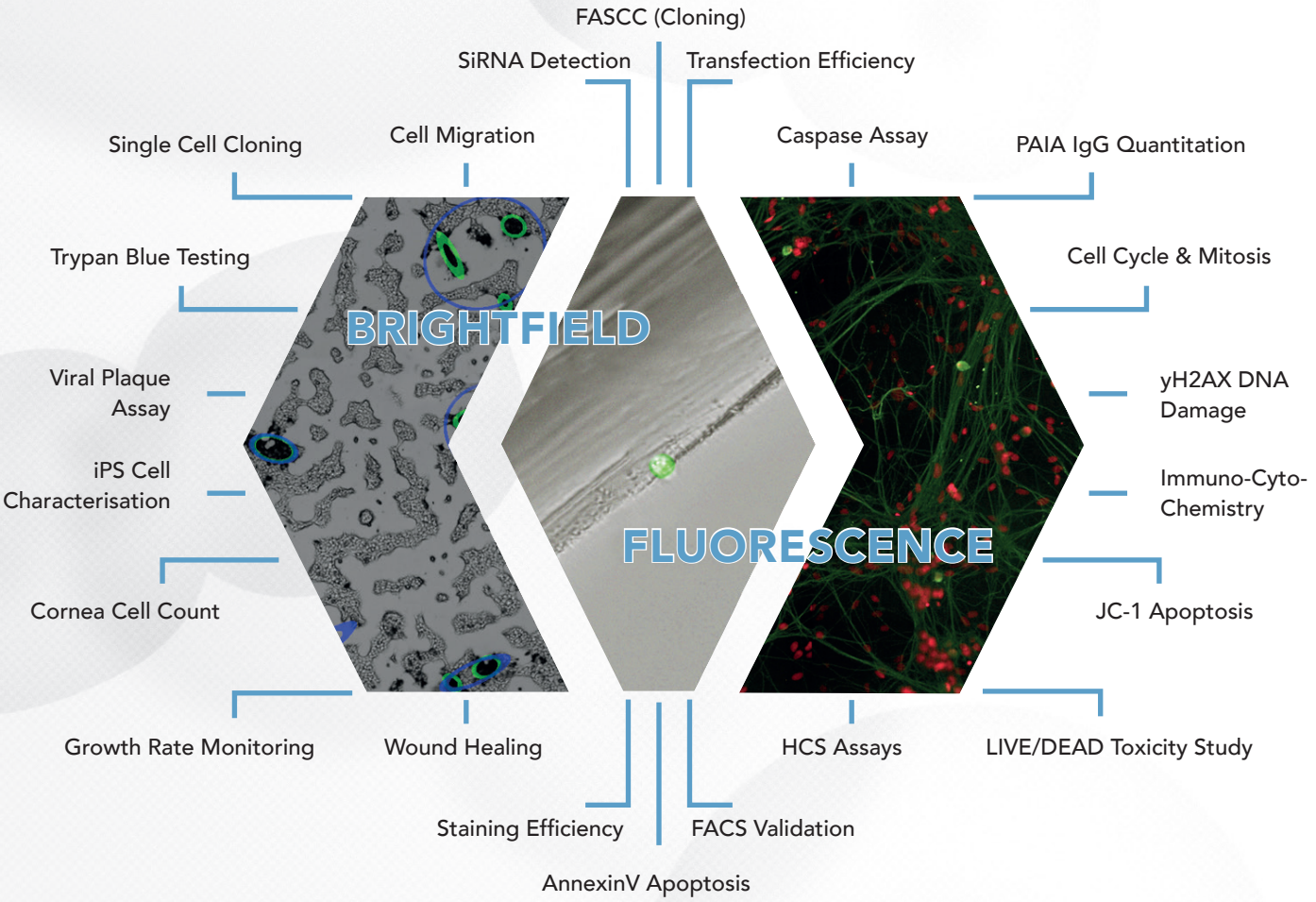
INNOVATIVE MOTION CONTROL

Harmonic drive at full speed for a gentle cell handling.



Precise control of imaging speed to account for cell culture requirements

SYNENTEC SUPPORTS A BROAD RANGE OF APPLICATIONS

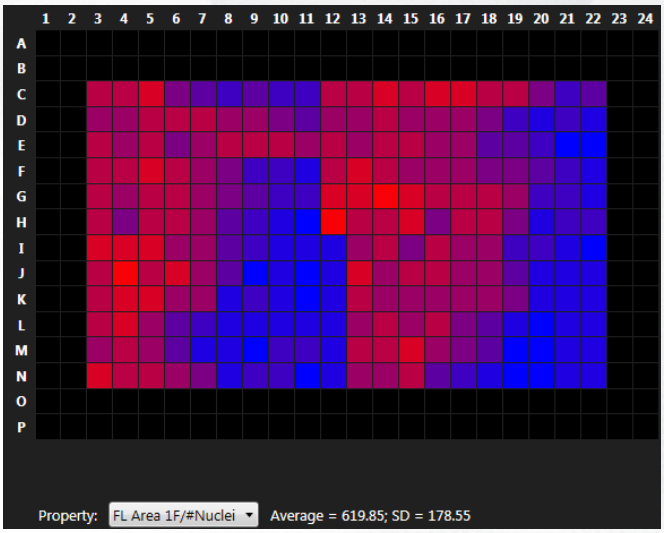


ONE PACKAGE - ENDLESS OPPORTUNITIES

SYNENTEC´s YT-software® package is a unique solution that provides a combination of user friendly experimental set-up and template definitions for automatic high throughput image acquisition and analysis, along with customisable data processing, handling and storage for advanced analytics for documentation and presentation purposes.

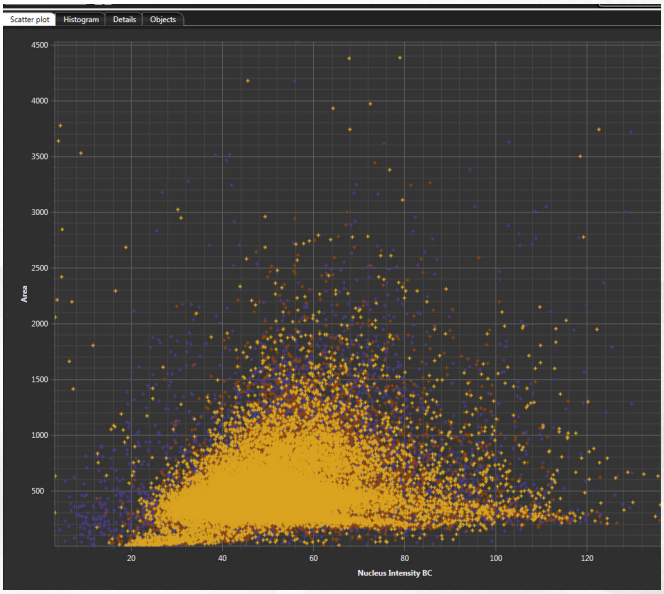
YT SOFTWARE - OPTIMAL DESIGN AND USABILITY

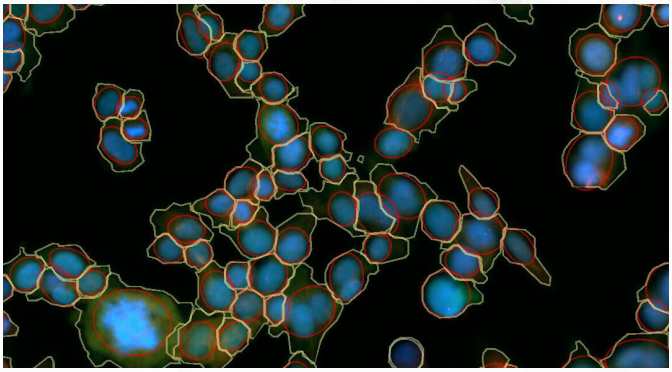
SYNENTEC provides the latest standard in image acquisition, device controlling as well as image- and data analysis software in the field of automated imaging systems. The YT software® offers a complete tool: starting from rapid and comprehensive experimental set-up and automatic high throughput image acquisition over precise image analysis up towards the storage, handling and processing of data for documentation and presentation purposes.



CELLAVISTA® and NYONE® SCIENTIFIC use a combination of brightfield and multiple fluorescence imaging technologies to automatically acquire and analyse large numbers of images from full wells to user or analytically defined regions inside microplates and other small cell culture vessels. Regardless of acquisition speed, the images are displayed on the fly during the measurement.

Images are archived and image analysis results are presented as spreadsheets, heat maps, time charts, histograms, and scatter plots.

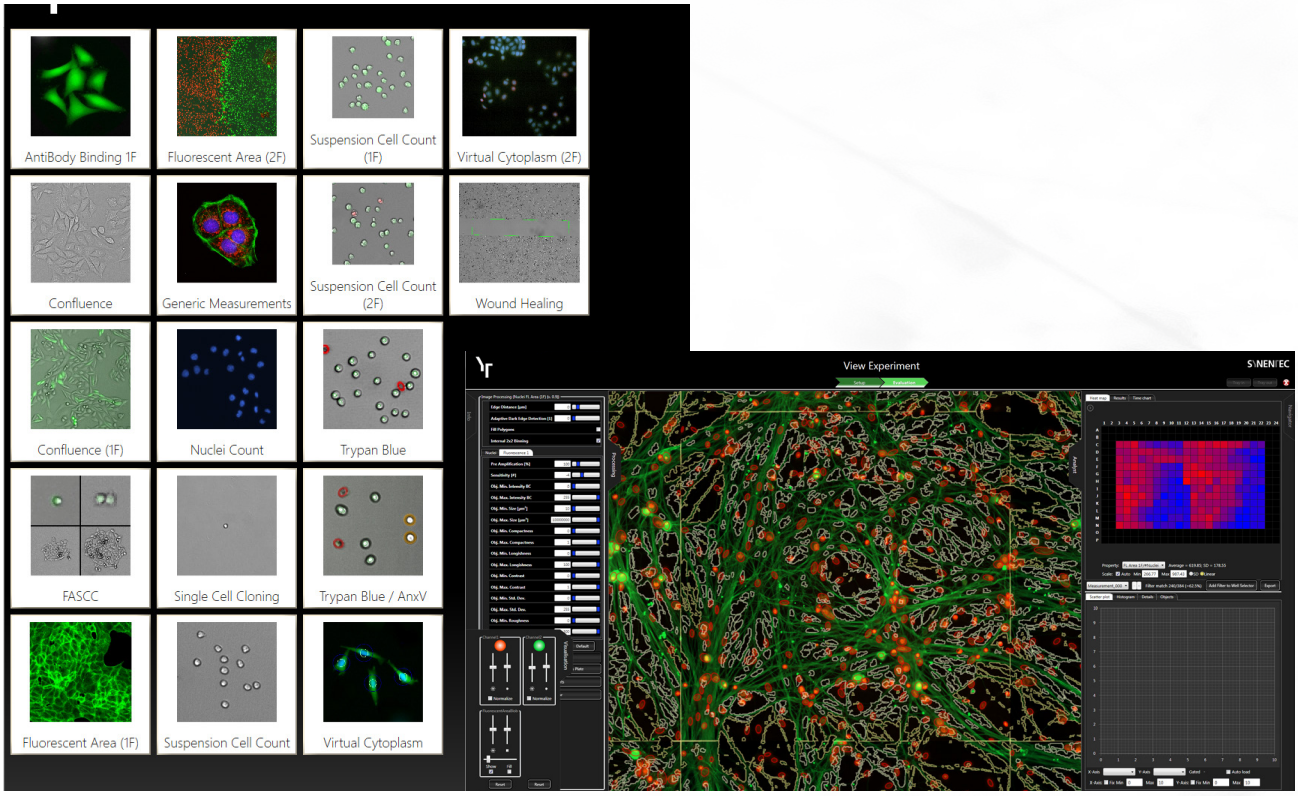




After finishing your measurements, stand-alone CELLAVISTA® workstation software enables remote access, review and data analysis from any PC and immediately makes CELLAVISTA® available for further experiments which maximises throughput.

THE MAIN GOAL OF OUR WORK IS TO KEEP YOUR CELLS IN FOCUS!

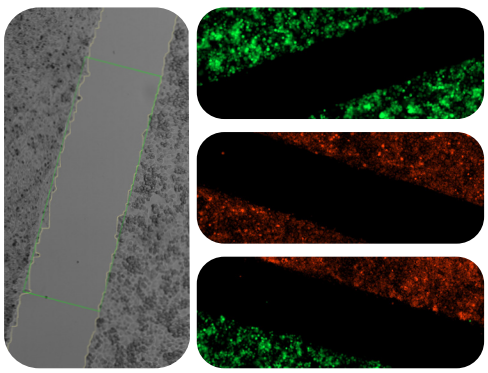
We provide tailored solutions to solve your individual cell culture challenges, like the proof of monoclonality for regulatory approval, or viability assays and cell density measurements in process development and apoptosis assays in drug screening or drug discovery as well as intricate high content analysis of sub-cellular structures.

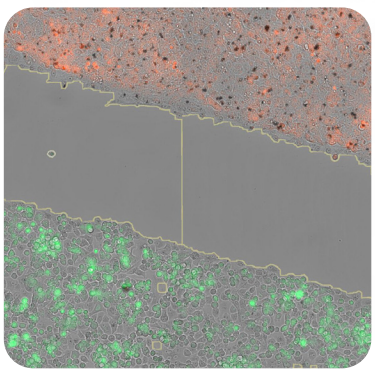


FROM CELLS TO NUMBERS

We have developed a coherent work flow comprising five steps: setup, prepare, measurement, evaluation and Export. Our customers benefit from an intuitive work flow to set up their experiments.

→ Brightfield	→ Fluorescence image	→ Overlay and image analysis	→ Results



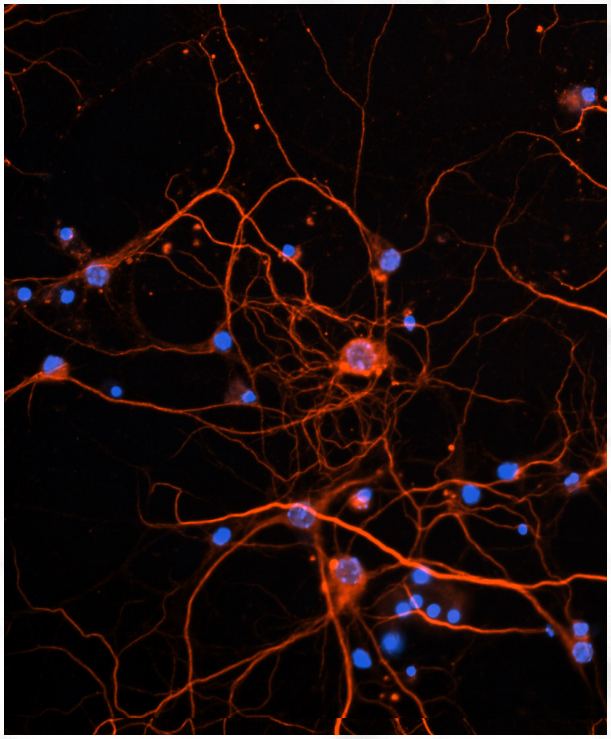


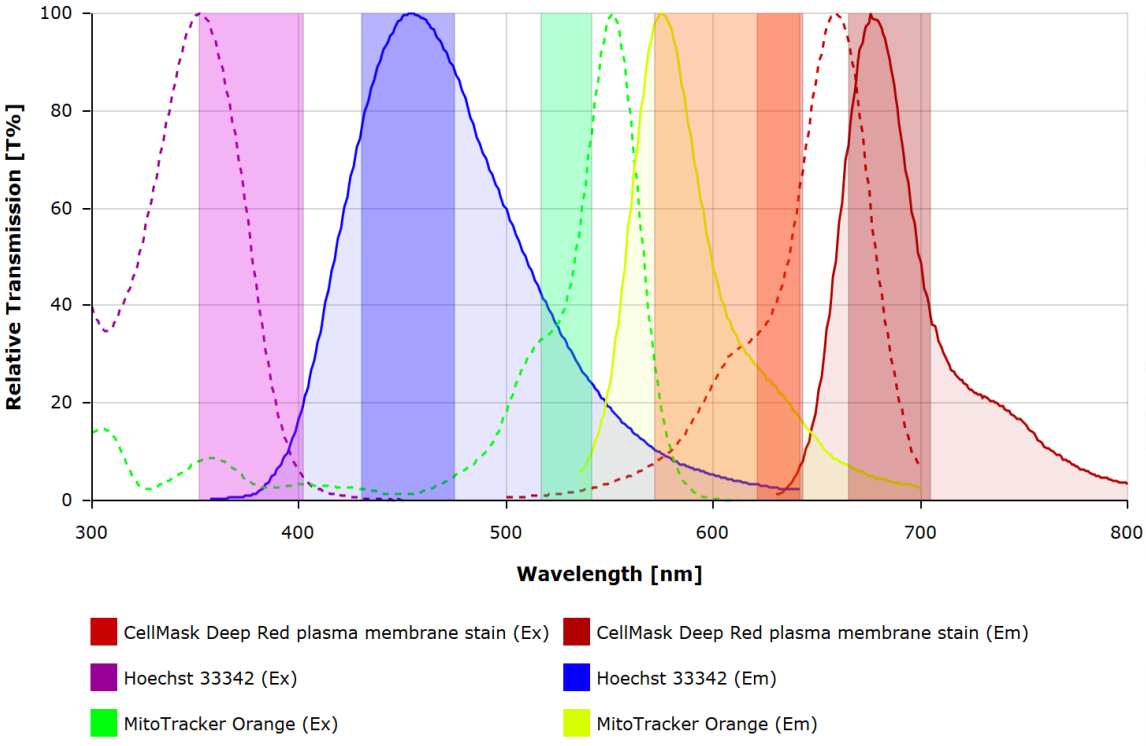
Results are displayed as values for the individual wells and can be translated into dose-response curves, heat maps or time series plots. All images can be exported in highest quality.

LEADING TOOLS FOR ASSAY DEVELOPMENT

FLUORESCENCE VIEWER

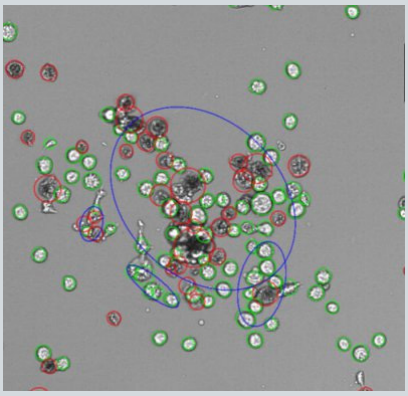
Tailored to our customers' demands we have developed a fluorescence viewer available online.
Due to increasing demand for multi-plexing flurescence imaging, we have developed an easy to use tool to display our devices' fluorescence capabilities as well as spectra of fluorophores.





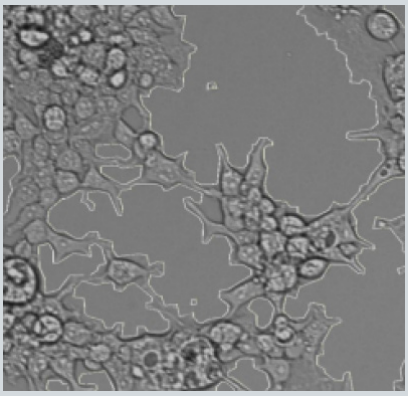
CELL QUANTIFICATION APPLICATIONS IN HIGH THROUGHPUT

High throughput Trypan Blue Dye Exclusion Assay



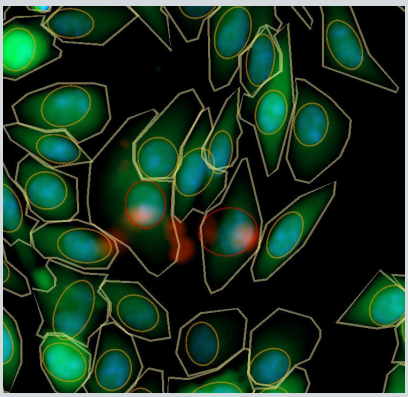
- Widely used technique to determine cell numbers and viability
- Using standard 96-well microplates
- Very fast counting- 96 samples in 2-4 minutes
- Small sample volumes, as low as 20 µL
- Accurate and reproducible data

Measuring Adherent Cells with Cell Confluence Operator



- For measuring cell growth rate and drug activity in adherent cells
- No trypsinization required
- Measures cell-covered area
- Adding fluorescent dye(s) possible
- Adherent cell count available

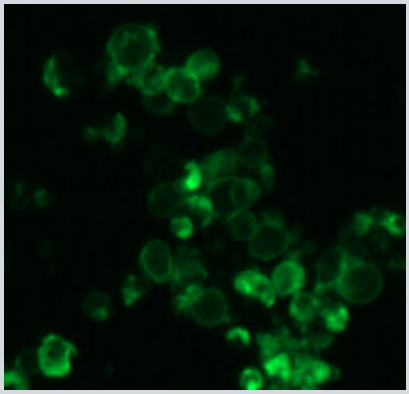
Live/Dead Cytotoxicity Assay



- A three-color fluorescence assay designed to simultaneously measure the number of live, dead, and total cells.
- Uses Calcein-AM to stain viable cells, propidium iodide (PI) for dead cells, and Hoechst 33342 to stain nuclei as an indirect measure of number of cells seeded in each well
- Enables calculating the EC50 values and drug response curves in a high throughput manner

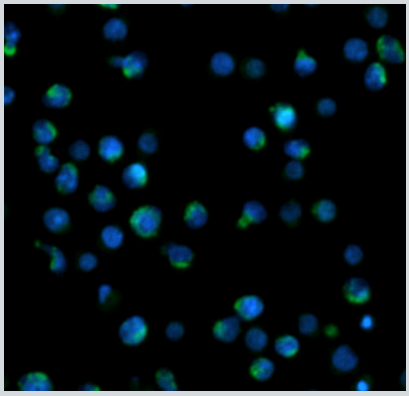
APOPTOSIS ASSAYS USING NYONE AND CELLAVISTA

Annexin-V Assay



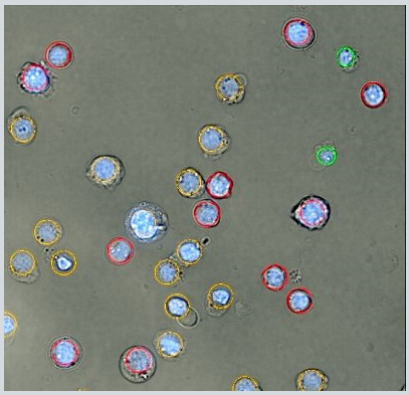
- One of the early markers of apoptosis is the translocation of phosphatidylserine (PS) in the lipid bilayer of apoptotic cells.
- In this early stage of apoptosis, Annexin V conjugates have direct access to the outer PS.
- FITC-labeled form of Annexin V enables the fluorescent detection of apoptotic cells in the culture with SYNENTEC's cell imager
- PI counterstain for dead or necrotic cells

JC-1 Mitochondrial Membrane Potential Assay



- In apoptosis, the loss of mitochondrial membrane potential enables monitoring of JC-1 colorshifting in mitochondria
- In healthy cells, JC-1 foms red J-aggregates. In Apoptotic cells, JC-1 remains in a monomeric, green fluorescent form.
- Therefore, early apoptotic and healthy cells are easy to distinguish with fluorescence measurements by the NYONE® or CELLAVISTA 4® System.

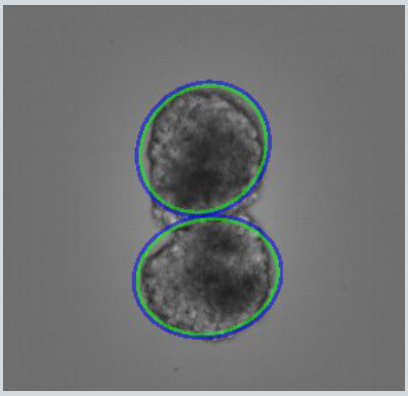
Caspase Assays



- Caspases are responsible for the induction of apoptosis.
- Caspase activation can end in the formation of 'apoptotic bodies' after cell fragmentation
- Variety of markers\labels possible with NYONE® and CELLAVISTA 4®
- Counter stain (Hoechst) can be employed. Two differently fluorescent caspase effectors can be used simultaneously.

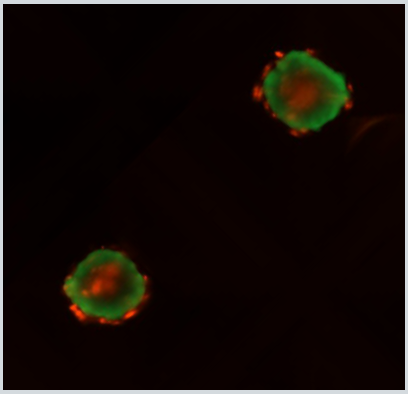
CELLULAR SCREENING IN 3D CULTURE SYSTEMS

Quantification Of Spheroids Using Brightfield Imaging



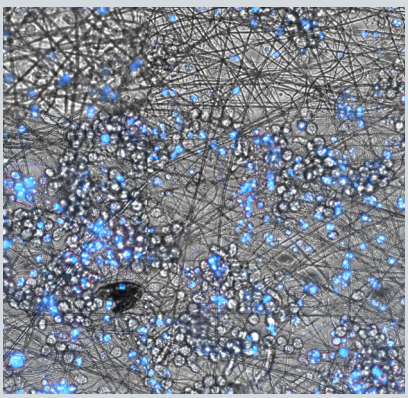
- SYNENTEC's Spheroid Count operator analyzes spheroids
- Quantifying size and number of spheroids per well
- Non-invasive brightfield imaging
- High throughput automation made easy

High Content Spheroid Analysis – Multiparametric Evaluation



- Spheroids are produced in Sphericalplate 5D (Kugelmeiers)
- 24-well plate containing 750 round-bottomed microwells
- Homogenous size of 750 spheroids per well
- CELLAVISTA 4®/ SCIENTIFIC and NYONE®/ SCIENTIFIC using harmonic drive without turbulence
- high content and high throughput analyses of these 3D spheroids employing a combination of fluorescence dyes

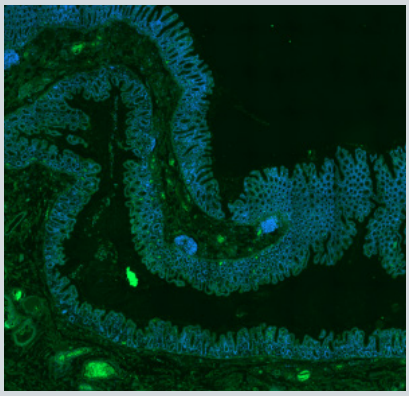
Imaging and Cell Counting in Microfibre Plates



- Cells are cultivated in Microfibreplates
- 24-well and 384 well plates
- mimicing of 3D microenvironment
- CELLAVISTA 4®/ SCIENTIFIC and NYONE®/ SCIENTIFIC using harmonic drive without turbulence
- high content and high throughput analyses of these cells in Brightfield and Fluorescence for various Applications

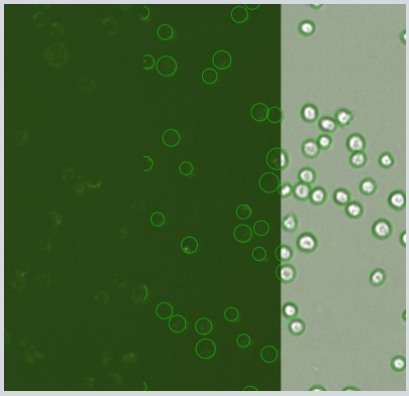
ASSAYS FOR DRUGS TARGETING THE IMMUNE SYSTEM

Immuno Cyto Chemistry (ICC/IHC) – Multicolor Cell Analysis



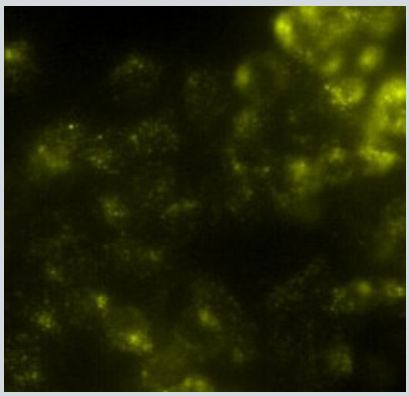
- Labeling using FL-conjugated antibodies.
- Determining presence and abundance of target protein
- Monitoring localization in live and fixed samples
- Detection of immunoprecipitation
- Fluorescence detection is very sensitive (no wash possible)
- Drug effects on the expression of proteins

Immunological Staining Of CD-Markers



- Cluster of differentiation (CD) cell surface markers
- Localization on cell surface
- Various functions enable easy immunological staining on living cells as well as monitoring drug effects on specific pathways

Antibody Internalization



- Antibody internalization of mAbs or ADCs
- ADCs have to be internalized for antigen specific drug delivery
- Monitoring undesired internalization of recruiting mAbs
- Antibody internalization is easily quantified using NYONE and CELLAVISTA 4 Scientific

CONTACT US

If you need application support or technical service for your SYNENTEC system or just want to have more information about our products, please get in touch.

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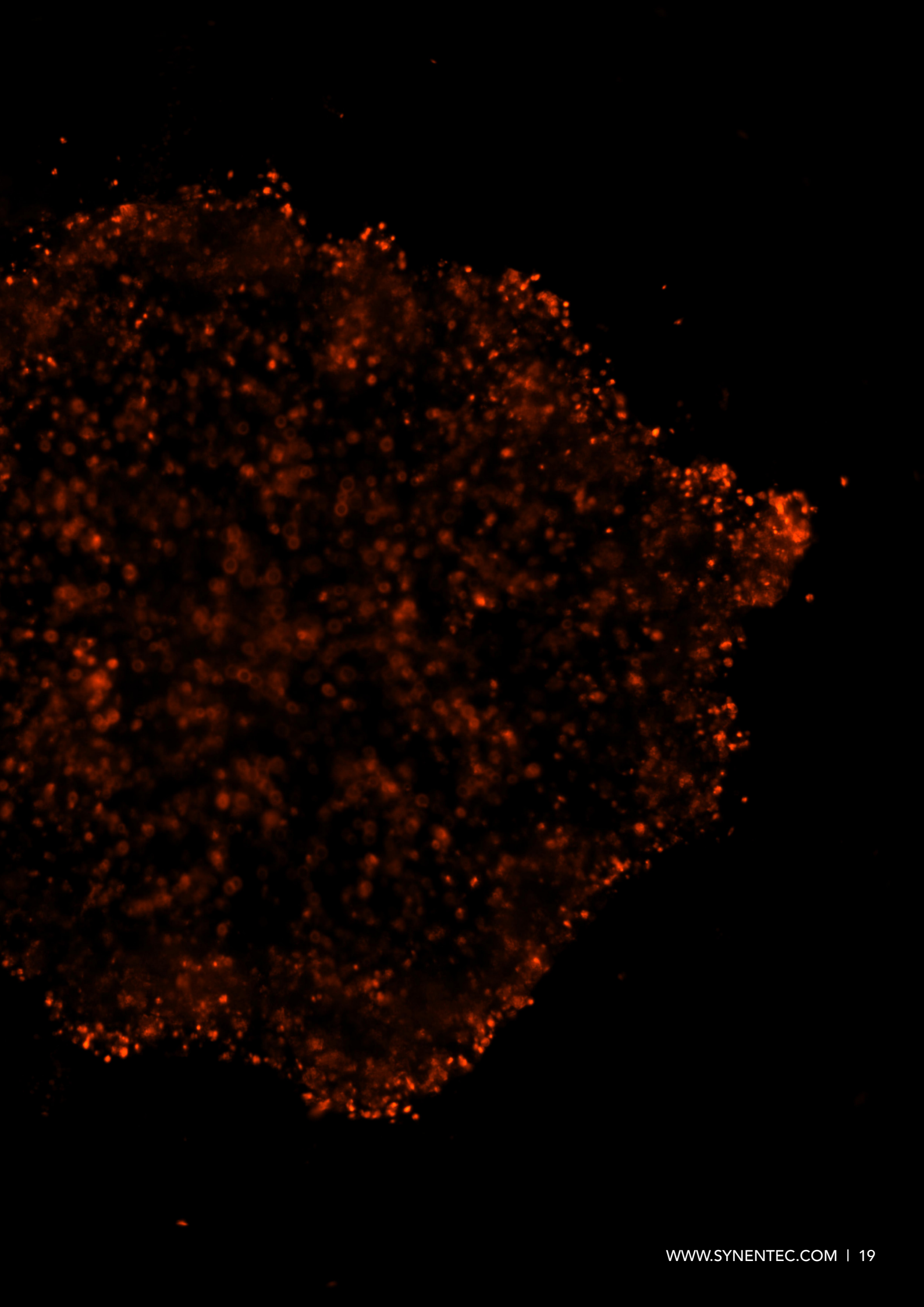

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