

Products Information

## BIO Division Products

محصولات بخش بایو آریافن ورزان

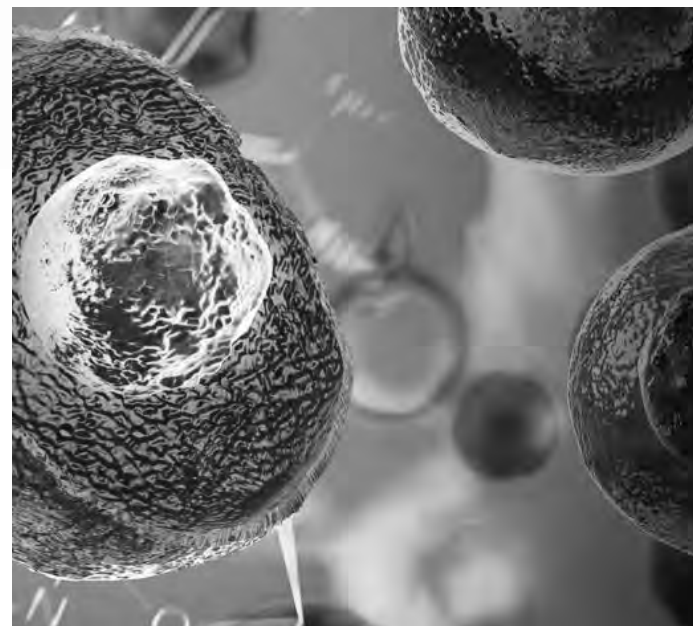
**AFV**

Aria Fan Varzan

"To Make a Better Life by Applied Science"

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## درباره آریافن ورزان

شرکت آریافن ورزان به شماره ثبت ۸۸۶۵۲۳ بخشی از هولدینگ علمی فاندفا است که بیش از یک دهه در زمینه‌های مختلف علوم کاربردی به شکل تخصصی فعالیت داشته است. ساختار سازمانی این مجموعه به گونه‌ای طراحی گردیده که تیم‌های تخصصی با تحصیلات مرتبط در سه حوزه کشت سلولی و پزشکی بازساختی، نانومتریولوژی و پلاسماتکنولوژی در قالب یک مجموعه با یکدیگر در تعامل باشند. طی یک دهه گذشته زیرساخت‌های کاری این مجموعه به شکل مدرن و منطبق بر استانداردهای روز دنیا رشد نموده تا علاوه بر تجربه فعالیت موثر در حیطه علوم یادشده حجم دانش و علم قابل توجهی را به واسطه روابط بین‌المللی و داخلی کاری خود در مجموعه گردآوری و از آن در فرایندهای کاری روزانه خود استفاده نماید. هم‌اکنون این مجموعه قریب به ۴۰ نیروی کار آزموده با تحصیلات بالا را به شکل سازماندهی شده‌ای در خود جای داده و به واسطه همین نظم نیز موفق به دریافت گواهی ایزو ۹۰۰۱:۲۰۱۵ برای فرایندهای کاری خود گردیده است.



NANO



BIO



PLASMA

ARIA FAN VARZAN is a part of FANDA Group



# Product Range



**Antibiotics**



**Cell Culture Media**



**Serum**



**PL**



**Reagents and others**



**Supplements**



**Nitrogen Tank**



**Cell Analyzer**

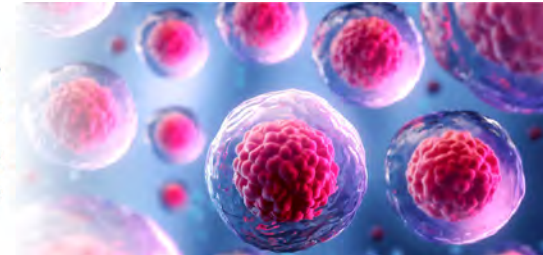


# Application Range

**Biotech**  
Companies



**Cell Therapy**  
and  
**Regenerative**  
medicine



**Cytogenetic**  
**Labs**  
Companies



**Research**  
and **Academic**  
centers



**Infertility**  
centers



**Supplements**  
Manufacturers













Products Information

# CELL CULTURE

**AFV**  
Aria Fan Varzan

"To Make a Better Life by Applied Science"

## COMPANY INTRODUCTION

### Company profile

#### KEY PLAYER FOR CELL CULTURE

European leader in the collection of animal sera.

Quality, efficiency and transparency commitments have made Biowest a European leader for over 30 years. Combined with a fully integrated supply chain and confident distributor network around the world, Biowest has earned the trust of the life science industries.

All around the world, people need to be treated for different medical conditions. However, we first need to understand the biological pathway which occurs in our very complex human body.

In vitro cell culture has been an amazing advancement, allowing us to reproduce the same mechanisms that occur in vivo and to test the effect of different substances in a particular cell line. The use of in vitro cell culture has been responsible for reducing the unnecessary use of live animals for research, disease diagnosis, and the manufacture of vaccines. Cell culture techniques have also allowed the development of medical innovations, such as gene therapy and stem cell therapy. Remarkable developments have been made possible thanks to the availability and the quality of cell culture reagents. Biowest is proud to be a key player in this field for over 30 years, by providing a large range of quality products.

Biowest offers a wide range of sera sources from multiple countries. Biowest is your guarantee of the best choice of serum origin and specifications, adjusted to your needs. Biowest controls the production of sera throughout the entire process, from collection locations around the world, to the final shipment of bottled serum from our warehouse, Thus guaranteeing a vertically integrated system of production and documentation.



**Biowest has been a real partner inscientific breakthroughs for over 30 years.**

## 2002

> Cronie L., Defamie N., Dupays L., Theveniau-Ruissy M., Goffin F., Pointis G., Malassine G.A., Connexin expression and gap junctional intercellular communication in human first trimester trophoblast, Mol Hum Reprod. 11, 1005-13.

## 2007

> Takahashi K., Tanabe K., Ohnuki M., Narita M., Ichisaka T., Tomoda K., Yamanaka S., Induction of Pluripotent Stem Cells from Adult Human Fibroblasts by Defined Factors, Cell 131, 861-872. Nobel Prize 2012 winning article on Stem Cells by Dr Yamanaka.

## 2009

> Funakoshi-Tago M., Tanabe S., Tago K., Itoh H., Mashino T., Sonoda Y, Kasahara T., Licochalcone A Potently Inhibits Tumor Necrosis Factor  $\alpha$ -Induced Nuclear Factor- $\kappa$ B Activation through the Direct Inhibition of I $\kappa$ B Kinase Complex Activation, Molecular Pharmacology 76, 745-753.

## 2011

> Sato Y, Iketani M, Kurihara Y, Yamaguchi M, Yamashita N, Nakamura F, Arie Y., Kawasaki T, Hirata T, Abe T, Kiyonari H, Strittmatter SM, Goshima Y, Takei K., Cartilage acidic protein-1B (LOTUS), an endogenous Nogo receptor antagonist for axon tract formation, Science 333(6043), 769-73.

## > 2016

Sanchez-Mejias E., Navarro V., Jimenez S., Sanchez-Mico M., Sanchez-Varo R., Nuñez-Díaz C., Trujillo-Estrada L., Davila JC., Marisa Vizuite, Gutierrez A, Vitorica J., Soluble phospho-tau from Alzheimer's disease hippocampus drives microglial degeneration, Acta Neuropathol. 132(6), 897-916.





## Quality system

Using specialized equipment and detailed SOP audits, Biowest ensures quality at every stage, thereby securing a consistently high quality product with low intra-lot variation. We are ISO 9001 and ISO 13485 certified. Biowest is registered by the French Ministry of Agriculture (Regulation (EC) n° 1069 / 2009) under the agreement n° FR 49.231.001 for the production of animal sera. According to the European Regulation EC n° 999/2001, european animals are tested for BSE before the corresponding blood is allowed to be processed.

The EU is a pioneer in BSE testing and individual identification of animals through ear tagging. This ensures the best possible traceability and the lowest BSE risk. Consequently the EU origin is the first choice for researchers in Japan and other selective markets.

## Working on your request

With our unmatched knowledge of cell culture products, Biowest has the special ability to support specific customer needs. Our R&D laboratory can customize formulations according to the specific needs of your research. Together, we can define every aspect of your custom-made product from beginning to end.

## Technical support

The experienced Technical Service Staff of Biowest is available to answer questions regarding our quality control and all Biowest products.

## WHY BIOWEST ?

- Quality and Service
- Auditability and Traceability
- Dedication and Commitment
- Compliance and Safety

**Worldwide sources and the widest range of sera available on the market**

## SERUMS

### FBS

- FBS South America
- FBS EU ORIGIN
- FBS USA
- FBS USDA APPROVED
- FBS URUGUAY
- FBS SOUTH AFRICA ORIGIN

### FBS premium

- FBS South America, Premium
- FBS EU Origin, Premium

### Gamma irradiation

- FBS South America, Gamma Irradiated

### Exosome depletion

- FBS South America, Exosome Depleted

### Bovine serum albumin - BSA

- Bovine Serum Albumin Lyophilised pH ~7
- Bovine Serum Albumin Protease Free
- Bovine Serum Albumin Fatty Acids Free
- Bovine Serum Albumin 30 % liquid

### Animal serum

- Bovine Serum (France Origin)
- Calf Serum
- New Born Calf Serum
- Horse Serum
- Donor Horse Serum
- Goat Serum
- Rabbit Serum
- Rat Serum
- Mouse Serum

### Animal plasma

- Bovine Plasma w/Sodium Citrate
- Rat Plasma w/Lithium Heparin
- Mouse Plasma w/Lithium Heparin





## CELL CULTURE MEDIA

### Dulbecco's modified eagle medium - DMEM

#### Dmem high glucose

- DMEM High Glucose w/o L-Glutamine w/o Sodium Pyruvate
- DMEM High Glucose w/ L-Glutamine w/o Sodium Pyruvate
- DMEM High Glucose w/ stable Glutamine w/ Sodium Pyruvate
- DMEM High Glucose w/ L-Glutamine w/ Sodium Pyruvate
- DMEM High Glucose w/o L-Glutamine w/ Sodium Pyruvate
- DMEM High Glucose w/o L-Glutamine w/ 25mM Hepes w/o-Sodium Pyruvate
- DMEM High Glucose w/ stable Glutamine w/ 25mM Hepes w/o-Sodium Pyruvate
- DMEM High Glucose w/ L-Glutamine w/o Sodium Bicarbonate w/ Sodium Pyruvate
- DMEM High Glucose w/ L-Glutamine w/o Sodium Bicarbonate w/o Sodium Pyruvate

#### Dmem low glucose

- DMEM Low Glucose w/ L-Glutamine w/ Sodium Pyruvate
- DMEM Low Glucose w/o L-Glutamine w/ Sodium Pyruvate
- DMEM Low Glucose w/ L-Glutamine w/ Sodium Pyruvate w/ 25 mM Hepes
- DMEM Low Glucose w/ Stable Glutamine w/ Sodium Pyruvate
- DMEM Low Glucose w/ L-Glutamin w/o Sodium Bicarbonate w/ Sodium Pyruvate



## CELL CULTURE MEDIA

### Dmem - HAM'S F12

- > DMEM - F12 w/o L- Glutamine w/o Hepes
- > DMEM - F12 w/o L-Glutamine w/o Hepes w/o Glucose
- > DMEM - F12 w/ stable Glutamine w/ 15 mM Hepes
- > DMEM - F12 w/ L-Glutamine w/ 15 mM Hepes w/o Sodium Bicarbonate w/ Sodium Pyruvate
- > DMEM - F12 w/o L-Glutamine w/ 15 mM Hepes
- > DMEM - F12 w/ L-Glutamine w/ 25 mM Hepes
- > DMEM - F12 w/o L-Glutamine w/ 25 mM Hepes
- > DMEM - F12 w/ L-Glutamine w/o Sodium Bicarbonate w/ 15 mM Hepes

### HAM'S F10 / F-10 nutrient medium

- > Ham's F10 w/ L-Glutamine w/25 mM Hepes
- > Ham's F10 w/ L-Glutamine
- > Ham's F10 w/o L-Glutamine
- > Ham's F10 w/ L-Glutamine w/o Sodium Bicarbonate



## CELL CULTURE MEDIA

### Medium 199

- > Medium 199 w/ Hanks' Salts w/ L-Glutamine
- > Medium 199 w/ Earle's Mod. Salts w/ L-Glutamine w/ 1.25g/l Sodium Bicarbonate
- > Medium 199 w/ Earle's Salts w/o L-Glutamine
- > Medium 199 w/ Earle's Salts w/ stable Glutamine w/ 25 mM Hepes
- > Medium 199 w/ Earle's Salts w/ stable Glutamine w/ 25 mM Hepes
- > Medium 199 w/ Earle's Salts w/ L-Glutamine w/o Sodium Bicarbonate
- > Medium 199 w/ Earle's Salts w/ L-Glutamine w/Sodium Bicarbonate w/ 25 mM Hepes

### Iscove's modified dulbecco's medium - IMDM

- > IMDM w/ L- Glutamine w/ 25mM Hepes
- > IMDM w/stable Glutamine w/ 25mM Hepes
- > IMDM w/o L-Glutamine w/o Hepes
- > IMDM w/ L-Glutamine w/o Sodium Bicarbonate w/ 25 mM Hepes
- > DMEM w/ L-Glutamine w/ 25 mM Hepes w/o Phenol Red



## CELL CULTURE MEDIA

### Minimum essential medium - MEM

- > MEM W/ EARLE'S SALTS
- > MEM w/ Earle's Salts w/ L-Glutamine
- > MEM w/ Earle's Salts w/ stable Glutamine
- > MEM w/ Earle's Salts w/o L-Glutamine w/ NEAA
- > MEM w/ Earle's Salts w/o L-Glutamine
- > MEM w/ Earle's Salts w/ L-Glutamine w/ 25 mM Hepes
- > MEM w/ Earle's Salts w/o L-Glutamine w/ 25 mM Hepes
- > MEM w/ Earle's Salts w/ L-Glutamine w/ NEAA w/o Sodium Bicarbonate
- > MEM w/ Earle's Salts w/ L-Glutamine w/o NEAA w/o Sodium Bicarbonate



### MEM w/ hanks' salts

- > MEM w/ Hanks' Salts Solution w/o L-Glutamine
- > MEM w/ Hanks' Salts w/o L-Glutamine w/ 25 mM Hepes
- > MEM w/ Hanks' Salts w/ L-Glutamine w/ NEAA w/o Sodium Bicarbonate

### MEM alpha modification

- > MEM Alpha w/ L-Glutamine w/o Ribonucleosides w/o Deoxyribonucleosides
- > MEM Alpha w/o L-Glutamine w/o Ribonucleosides w/o Deoxyribonucleosides
- > MEM Alpha Modification w/ Earle's Salts w/ L-Glutamine w/o Sodium Bicarbonate

## CELL CULTURE MEDIA

### RPMI 1640 medium

- RPMI 1640 w/ L-Glutamine
- RPMI 1640 w/o L-Glutamine
- RPMI 1640 w/ stable Glutamine
- RPMI 1640 w/ L-Glutamine w/ 25 mM Hepes
- RPMI 1640 w/ stable Glutamine w/ 25 mM Hepes
- RPMI 1640 w/o L-Glutamine w/ 25 mM Hepes
- RPMI 1640 Dutch Modification w/o L-Glutamine w/ 1g/l Sodium Bicarbonate w/20mM Hepes
- RPMI 1640 w/o L-Glutamine w/o Folic Acid
- RPMI 1640 w/o L-Glutamine w/o Phenol Red
- RPMI 1640 w/ L-Glutamine w/o Sodium Bicarbonate
- RPMI 1640 w/o L-Glutamine w/o Sodium Bicarbonate
- RPMI 1640 w/ L-Glutamine w/o Sodium Bicarbonate w/o Phenol Red
- RPMI 1640 w/o L-Glutamine w/o Sodium Bicarbonate w/o Phenol Red
- RPMI 1640 w/ L- Glutamine w/o Sodium Bicarbonate w/ 25 mM Hepes w/o Phenol Red
- RPMI 1640 w/ L-Glutamine w/o Sodium Bicarbonate w/o Glucose

### Schneider's drosophila medium

- Schneider's Drosophila Medium





## Salt Solutions & Salts / Buffers

### Dulbecco's phosphate buffered saline - DPBS

- Dulbecco's Phosphate Buffered Saline w/o Calcium w/o Magnesium
- Dulbecco's Phosphate Buffered Saline w/o Calcium w/o Magnesium (sterile)
- Dulbecco's Phosphate Buffered Saline 10X w/o Calcium w/o Magnesium
- Dulbecco's Phosphate Buffered Saline 10X w/ Calcium w/ Magnesium
- Dulbecco's Phosphate Buffered Saline w/o Calcium w/o Magnesium

### Earle's balanced salts solutions - EBSS

- EBSS w/o Calcium w/o Magnesium
- EBSS w/ Calcium w/ Magnesium
- EBSS10X w/ Calcium w/ Magnesium w/o Sodium Bicarbonate
- EBSS 10X w/o Calcium w/o Magnesium w/o Sodium Bicarbonate



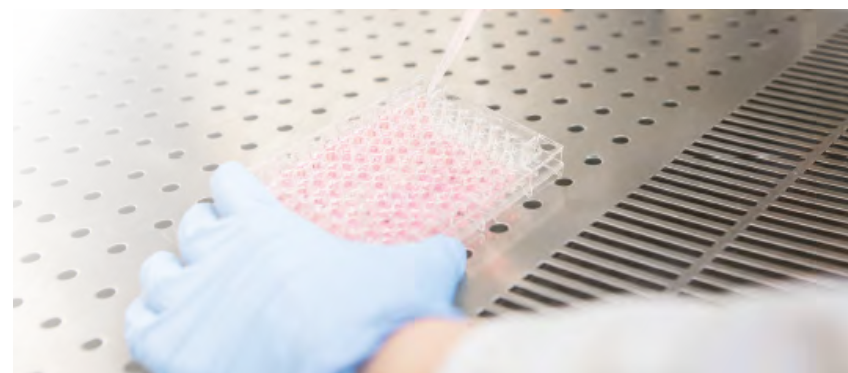
## Salt Solutions & Salts / Buffers

### Hanks' balanced salts solutions - HBSS

- HBSS w/o Calcium w/o Magnesium w/o Sodium Bicarbonate w/o Phenol Red
- HBSS w/ Calcium w/ Magnesium w/ Sodium Bicarbonate w/ Phenol Red
- HBSS w/o Calcium w/o Magnesium w/ Sodium Bicarbonate w/o Phenol Red
- HBSS w/o Calcium w/o Magnesium w/ Sodium Bicarbonate w/ Phenol Red
- HBSS w/ Calcium w/ Magnesium w/ Sodium Bicarbonate w/o Phenol Red
- HBSS 10X w/o Calcium w/o Magnesium w/o Sodium Bicarbonate w/o Phenol Red
- HBSS 10X w/ Calcium w/ Magnesium w/o Sodium Bicarbonate w/ Phenol Red
- HBSS 10X w/o Calcium w/o Magnesium w/ Sodium Bicarbonate w/o Phenol Red
- HBSS 10X w/o Calcium w/o Magnesium w/o Sodium Bicarbonate w/ Phenol Red
- HBSS w/o Calcium w/o Magnesium w/o Sodium Bicarbonate w/o Phenol Red
- HBSS w/ Calcium w/ Magnesium w/o Sodium Bicarbonate w/ Phenol Red

### HEPES

- HEPES Buffer 1 M



## CELL CULTURE REAGENTS & OTHER PRODUCTS

### TRYPsin

- Trypsin-EDTA 1X in solution w/o Calcium w/o Magnesium w/ Phenol Red
- Trypsin-EDTA 1X in PBS w/o Calcium w/o Magnesium w/o Phenol Red
- Trypsin-EDTA 10X
- Recombinant Trypsin-EDTA 1X in PBS w/o Calcium w/o Magnesium w/o Phenol Red

### Accutase

- Accutase

### Amino acids and vitamins

- MEM Vitamins 100X w/o L-Glutamine
- MEM non Essential Amino Acids 100X w/o L-Glutamine
- MEM non Essential Amino Acids 100X w/o L-Glutamine

### D-glucose monohydrate dextrose, cell culture tested

- D-Glucose Monohydrate (Dextrose), cell culture tested

### Glutamine

- L-Glutamine 100X, 200mM
- Glutamine stable 100X, 200mM
- L-Glutamine
- L-Alanyl-L-Glutamine, stable Glutamine

### Colcemid

- Colcemid 10 µg/ml in PBS (Demecolcin)

### Phytohaemagglutinin M - PHA-M

- Phytohaemagglutinin M - PHA-M

### Lymphosep

- Lymphosep, Lymphocyte Separation Media

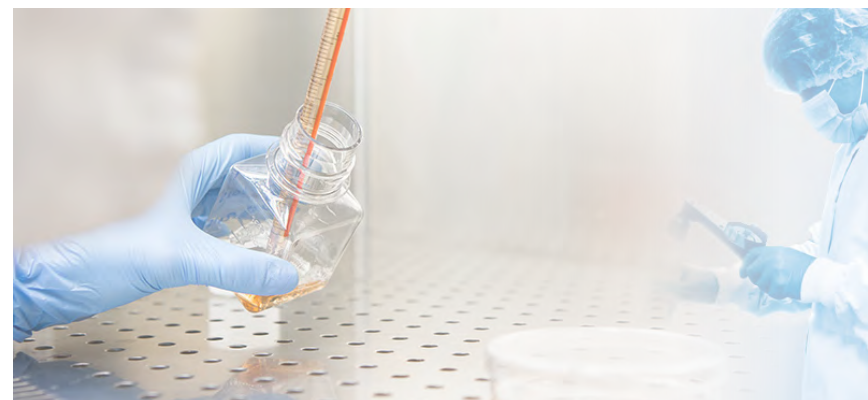
### Cell culture water

- Cell Culture Water Pyrogen free



## ANTIBIOTICS

- Amphotericin B
- Antibiotic-Antimycotic 100X
- G-418 (Geneticin) Solution
- G-418 Sulfate
- Gentamicin Sulfate
- Gentamicin Sulfate 10 mg/ml
- Gentamicin Sulfate 50 mg/ml
- Glutamine-Penicillin-Streptomycin 100X
- Nanomycopolitine Concentrat 20 x
- Penicillin G Sodium Salt - 1 Million Units
- Penicillin-Streptomycin
- Penicillin-Streptomycin Solution 100X







Products Information

PL

**AFV**  
Aria Fan Varzan

"To Make a Better Life by Applied Science"





### Know-how

Scientific background and present milestones

Our biotech company was founded in the environment of the RWTH Aachen University in 2015. In the same year, we received the EXIST Business Start-up Grant from the German Federal Ministry for Economic Affairs and Energy. This grant supports innovative business start-up projects in the academic field. Since then, we have been exploiting the broad potential of human platelets – the basis of our growth-promoting cell culture media.

### Our story

The idea of animal-free cell culture solutions

In 2015, we started business with the idea to deliver safe and animal component-free cell culture tools.

Today, we have put our idea into practice. That means we managed to change the possibilities of ethically justifiable cell culture:

Researchers still switch from Fetal Bovine Serum (FBS) to our animal suffering-free products. Stem cell therapy benefits the regeneration potential of our platelet-derived products.

And we keep moving forward.

### Quality statement

Quality is important to our business

We value our customers. Therefore we strive to provide them with products and services, which meet and even exceed their expectations.

- Our cell culture supplements are derived from out-dated human platelets which are subjected to a freeze-thaw process to induce growth factors release.
- Obtained from multiple donors units (>300 units) pooled in large batch sizes to produce a consistent product with minimal lot-to-lot variation.
- Each donor unit is tested and approved for human use.
- The consistent supply of donor platelets helps stabilize availability and pricing.
- All products are adequately filtered, tested and certified as mycoplasma-free.

### Elarem™ perform gmp grade

ELAREM™ Perform GMP Grade is a human Platelet Lysate of EU origin supporting in vitro expansion of various primary cells and cell lines. The xeno-free cell culture supplement meets the requirements of academic and industrial cell expansion: The safe and performance-increasing cell growth promoter ensures efficient lab processes and a xeno-free cell environment. As a result, ELAREM™ Perform GMP Grade assures an easy transition of research results into clinical applications.

ELAREM™ Perform GMP Grade is manufactured under GMP conform conditions using high quality raw materials. Furthermore, the production process is performed within a closed system using sterile connections. As a result, ELAREM™ Perform GMP Grade is suited for usage in GMP-compliant cell culture SOPs. Each batch of ELAREM™ Perform GMP Grade is produced from large pools of platelet units to ensure batch-to-batch consistency and enable reproducible conditions. ELAREM™ Perform GMP Grade is manufactured from platelet units obtained from healthy blood donors at licensed blood centres in the EU. Certificate of Analysis (CoA) and Safety Data Sheet (SDS) are available upon request.

### ELAREM™ prime research grade

ELAREM™ Prime is the world novelty enabling a simple switch from FBS to human Platelet Lysate. The product supports in vitro expansion of various cell types and perfectly suits the needs of FBS users.

ELAREM™ Prime is the first human Platelet Lysate directly comparable with FBS – in terms of price and cell performance. This enables the simplest switch ever from animal serum to animal-free media. Furthermore, FBS-related batch testing is eliminated: ELAREM™ Prime is produced in large batches of platelet units to ensure batch-to-batch consistency, leading to reproducible results. ELAREM™ Prime is manufactured from platelets obtained from healthy blood donors at licensed blood centres in the EU.





Products Information

## NITROGEN TANK

**AFV**

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"To Make a Better Life by Applied Science"

# ATOCEL

## CRYOPRESERVATION EQUIPMENT

### Cryopreservation equipment

- Manufactured to world class of excellence
- Two year vacume guarantee
- Copact, Versatile, Strong and Beautiful
- Favorable diversity for different applications
- Unique design for high capacity and low compensation



## **SM series**

are ideal Nitrogen Tank for storage biological samples

### **SM Series**

are designed to use with canister for customer with high storage volume and low evaporation rate, available in sizes; 1, 3, 4, 10, 15, 20, 30, 35 and 47 liters.

### **SMR series**

are designed to use with rack and box with high storage volume and low evaporation rate, available in sizes ; 47,65,120 and 175 liters.

### **SMW series**

are designed to use for large biological samples with wide neck, available in sizes ;5,10,16,30,35 and 125 liters.

### **SH series**

SH Series are ideal Nitrogen Container for transferring liquid nitrogen,available in sizes; 10, 20, 30, 35 and 50 liters.

### **MW series**

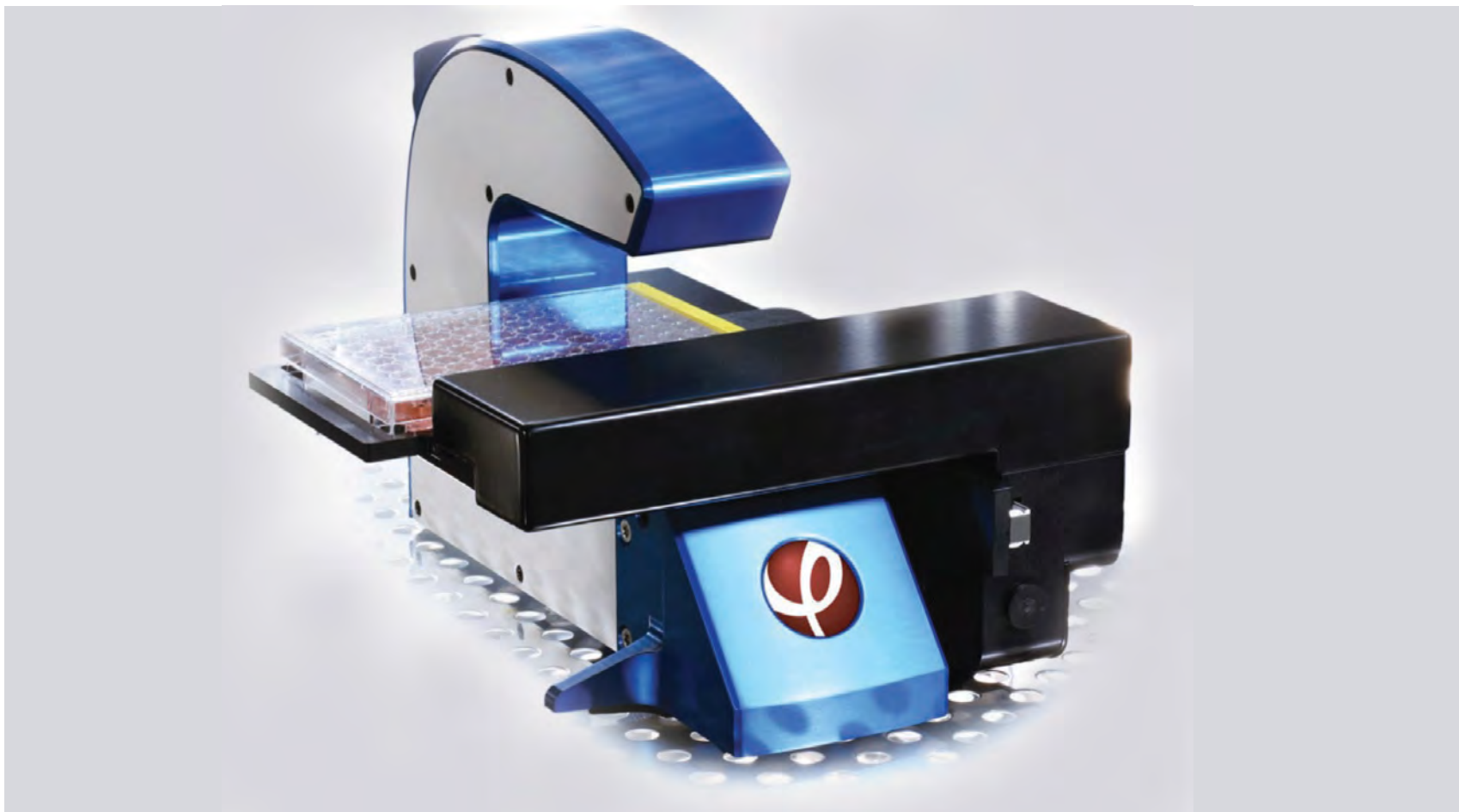
MW Series are idea Nitrogen Tank for transferring biological samples under static environment,available in sizes; 30,35 and 50 liters.

### **Accessory different**

Accessory Different accessories such as Gloves, Canisters, Racks and...







Products Information

# CELL ANALYZER

**AFV**

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## Company Introduction

Unprecedented time-lapse imaging minute by minute and day after day

HoloMonitor offers unique imaging capabilities that greatly enhance our understanding of cell behavior, previously unachievable by other technologies

Ed Luther, Supervisor of Core Imaging and Cytometry Facility, Northeastern University, Boston, USA

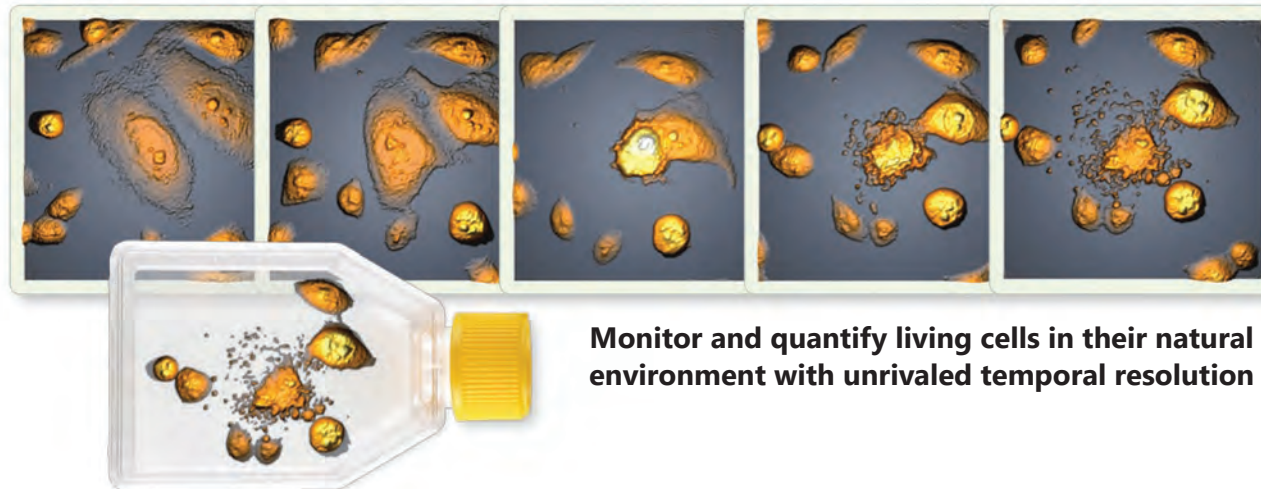
HoloMonitor M4 is a fantastic tool. The spectrum of applications are endless. I am fully convinced that this is the beginning of a new era for research

*Dr. Alain Geloën, National Institute of Applied Sciences, Lyon*

**For powerful discoveries  
in your incubator**

### Software

- > Autoimmune diseases
- > Cancer research
- > Stem cell biology
- > Inflammation Gene therapy
- > Toxicological studies
- > Regenerative medicine



**Monitor and quantify living cells in their natural environment with unrivaled temporal resolution**

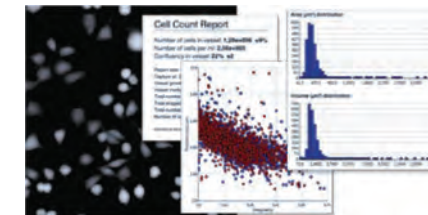
## APPLICATIONS

Unprecedented time-lapse imaging minute by minute and day after day

### Comprehensive cell culture qca

Instantaneously assess your tissue culture integrity

- > Quantitative tissue culture QC metrics within seconds.
- > Cellular growth rate and morphological changes simultaneously.
- > Cellular population statistics comprise many relevant cell-by-cell measurements (size, optical cell volume, thickness, irregularity, etc).

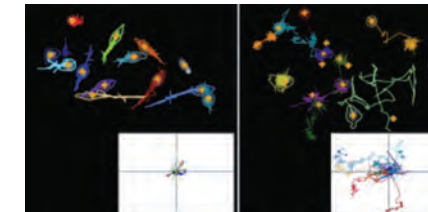


Growth rate data for untreated L929 mouse fibroblasts.

### Cell motility

Monitor cell movement and morphological changes simultaneously

- > Robust segmentation and tracking of cells of interest.
- > Cell motility speed and cell migration velocity measurements at your fingertips.
- > Non-invasive nature allows subsequent cellular staining for further analysis upon conclusion of holographic imaging.

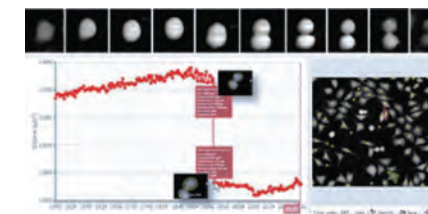


XY spacial movement plots of murine macro-phages M1 phenotype and M2 phenotype.

### Cell cycle kinetics

Analyze cells through rounds of replication with full confidence

- > No perturbation to the natural cell state and function with label-free analysis.
- > Robust measurement of mitosis and cytokinesis based on reliable automated segmentation.
- > Cytometric data with effortless relationship between images and quantitative data.
- > Results comparable to classic cytometric DNA cell cycle studies using fluorescent DNA stains.



Changes in optical volume over time based on tracking of one cell of interest.

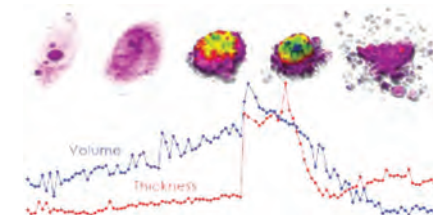
## APPLICATIONS

Unprecedented time-lapse imaging minute by minute and day after day

### Cell death

Advanced studies with real-time observation of critical events

- Continuous 2D and 3D visual observation of cellular death in second intervals.
- Large portfolio of quantitative morphological parameters: optical cell volume, thickness, area, irregularity, eccentricity and many more.
- Single cell tracking and population data analysis.
- Ideal suitability for studying drug-induced cell death.

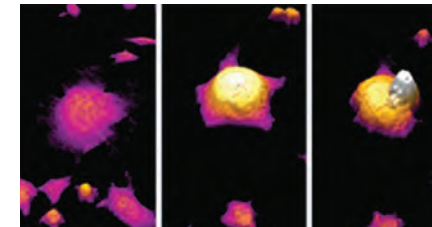


*Changes in optical volume over time based on tracking of one cell of interest.*

### Rare or transient cellular events

Visualize previously unseen and analyze formerly undetected

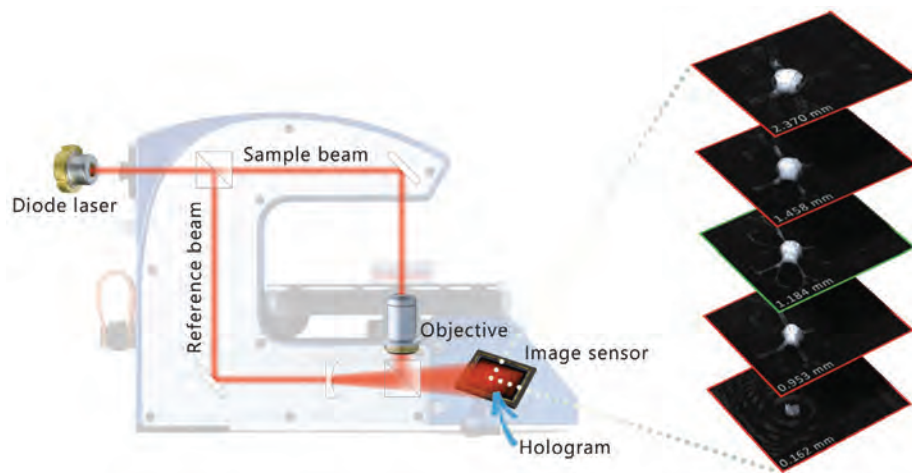
- Unsurpassed temporal resolution with speed of image acquisition of up to 1 image per second.
- Morphological and quantitative tracking of cells of interest over multiple days.
- Cell-by-cell population data analysis.



*Changes in optical volume over time based on tracking of one cell of interest.*

## HOLOMONITOR® M4

Live-cell / Quantitative / Label-free / Long-term



### Holographic microscopy

HoloMonitor M4 utilizes the principle of holographic microscopy. A low-power laser beam is split into two, one illuminating the sample and the other providing a reference beam. Laser light passing through the sample is affected by intra-cellular structures causing a phase shift of the illuminating light.

Once combined, the two beams create an interference pattern which is recorded by a digital image sensor. The recorded interference pattern – the hologram – is then pro-cessed computationally to produce a holographic image.

### Robust segmentation

The foundation of quantitative analysis is the ability to identify discrete event for quantification

### Digital autofocus

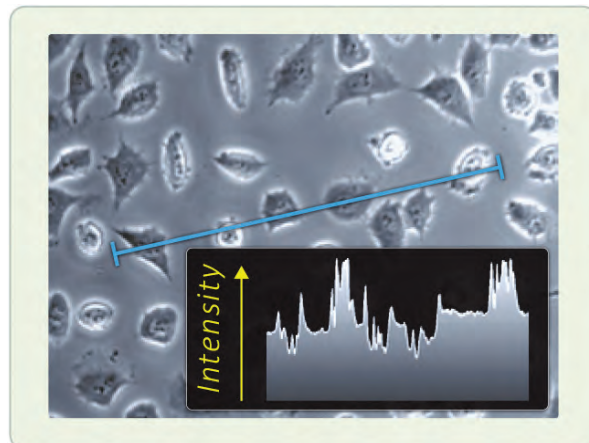
The fine focusing is done entirely in software, after recording. The digitally recorded interference pattern is computationally processed to create holographic images over a range of focal distances. From this temporary stack of images, HoloMonitor M4 automatically selects the best in focus image to produce the final holographic image. Alternatively, users may manually select the focal distance to focus on a plane of interest.



## HoloMonitor® M4

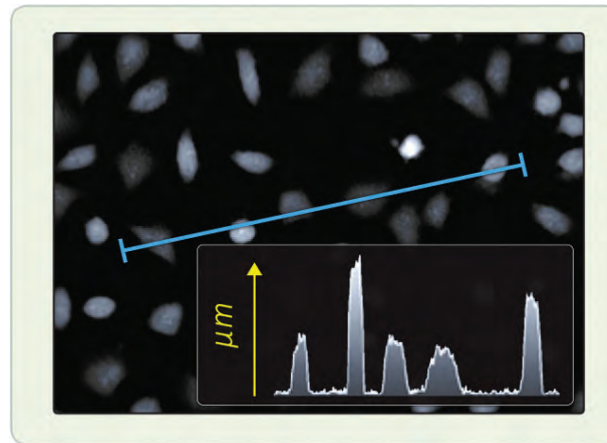
### Phase contrast

In the line profile of the traditional phase contrast image the background value cannot be accurately determined and a characteristic bright halo around the edge of the cells is present. This type of image does not lend itself for reliable segmentation.



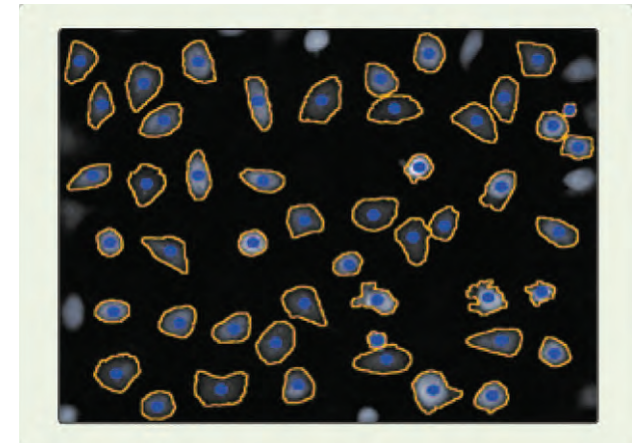
### Holomonitor

In contrast, holographic images can be quantified as they reflect the optical thickness of the cell and optical density variations in the specimen. Additionally, holographic images have a background level of zero and the intensity of the events measured as positive values.



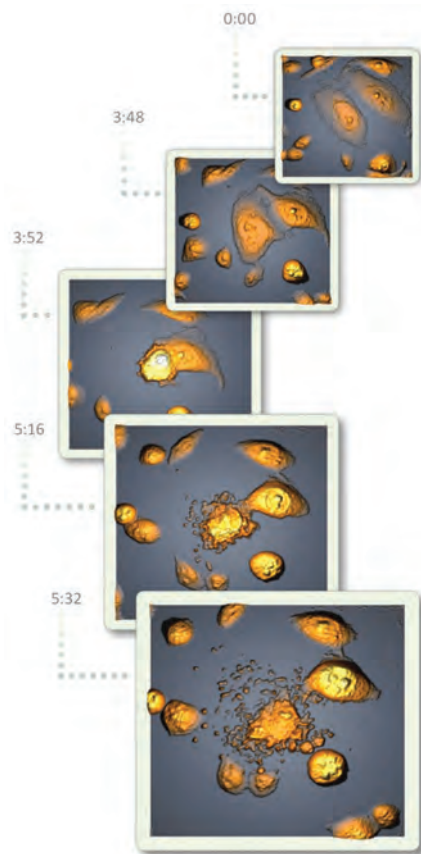
### Segmentation

HoloMonitor methodology enables reliable segmentation seen in the image as yellow cellular boundaries defined by a proprietary software algorithm.



## HoloMonitor® M4

An essential and versatile tool for label-free kinetic cell analysis



### High temporal resolution

Label-free cell cultures are continuously monitored and analyzed in their natural environment. With the ability to acquire one image per second, both short-term monitoring of transient events in second intervals, and multi-day studies with images captured at user-defined intervals, are possible.

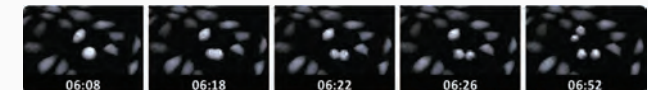
### Holometrics®

Quantitative phase shift measurements are translated by sophisticated software algorithms into morphological parameters—optical cell volume, thickness, texture and many more.



### Label-free samples

As samples are analyzed unstained, no sample preparation is required, and most importantly, cellular function is not altered by toxic stains.

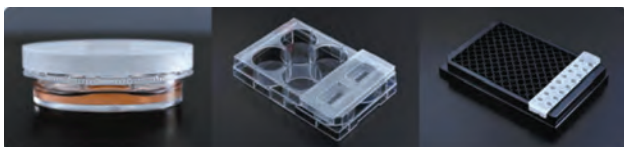


### Long-term evaluation

The incubator-tolerant design makes HoloMonitor M4 especially well-suited for long-term kinetic cellular analysis. The low intensity, single wavelength laser generates no heat and reduces the risk of photo-damage to an absolute minimum.

## HoloMonitor® M4

### Supported sample vessels



### Motorized stage

HoloMonitor M4 may optionally be equipped with a motorized stage. The high precision stage allows HoloMonitor M4 to record time-lapse movies at multiple locations, in parallel. Sample locations may be within the same culture or in different cultures. The stage control software is fully integrated in the Holo-Monitor software. After sample locations have been graphically programmed, time-lapse movies will be automatically recorded at each location.

### Reliable and cost-effective operation

A new and innovative mechanical design together with intuitive software interface makes HoloMonitor M4 operation simple and reliable.

**A new and innovative mechanical design together with intuitive software interface makes HoloMonitor M4 operation simple and reliable.**

## HoloMonitor® M4

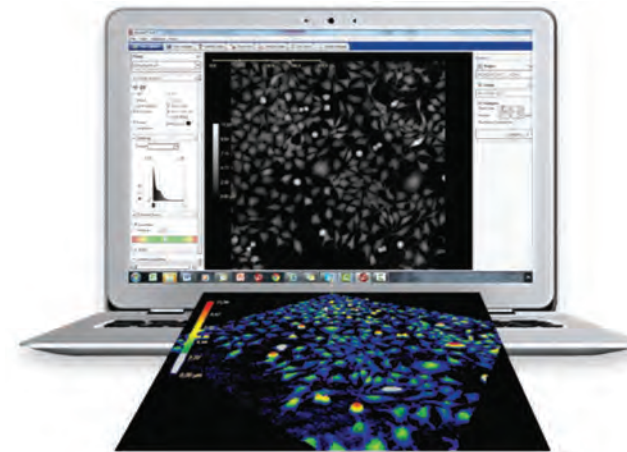
simple workflow / intuitive user interface/ proprietary software

### Record time-lapse

Position the vessel on the mechanical stage and record a time-lapse. The total recording time and time interval between image captures are operator-determined.

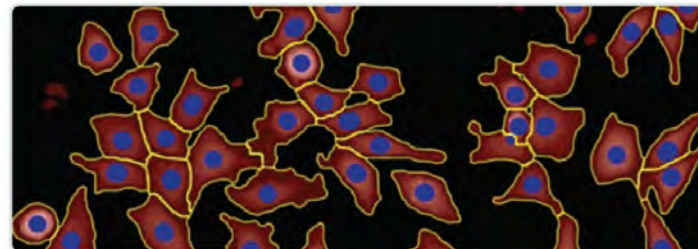
### View images

View images and time-lapse movies in gray scale and color, 2D and 3D. Color variations represent differences in optical thickness. Adjusting threshold allows digital filtering of cells of interest.



### Segment cells

Choose one of many available segmentation strategies and fine-tune by adjusting background threshold and cell size.



## HoloMonitor® M4

simple workflow / intuitive user interface/ proprietary software

### Track cells

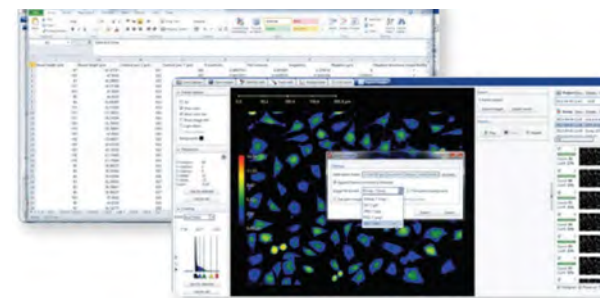
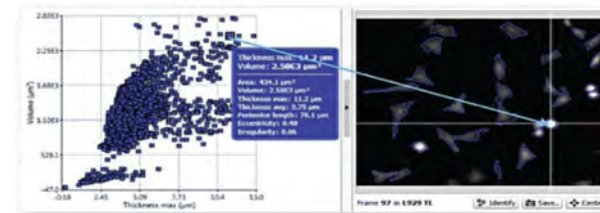
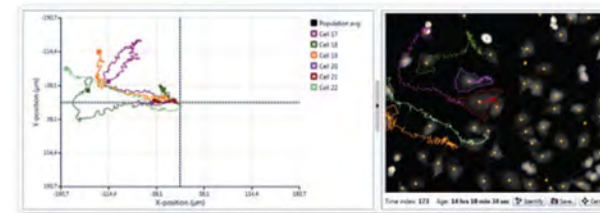
Select individual cells to simultaneously track cell movement and changes in cell morphology over time. Individual cell movements are displayed in spatial plots with related quantitative parameters.

### Analyze and display data

Perform comprehensive automated analysis with options to display quantitative and morphometric features in two dimensional histograms and scattergrams. Data verification is done based on images (example mitotic cells).

### Expor

The time-lapse movies can be viewed and effortlessly exported. The acquired images can be easily saved in common image file formats. Additionally, data can be exported as XML, to Excel or easily processed in multiple freeware programs.





## HoloMonitor® M4

### HoloMonitor® M4 Base unit

Sample stage	Fixed
Light source	External laser unit, 635 nm
Sample illumination	635 nm, 0.2 mW/cm <sup>2</sup>
Objective	20×
Lateral resolution	1 μm
Field of view	0.25 mm <sup>2</sup>
Working distance	0.5 – 2 mm
Autofocusing range	1.5 mm
Maximum image rate	1 image/s
Image size	1024 × 1024 pixel
Dimensions (L × W × H)	250 × 160 × 180 mm
Weight incl. fixed stage	3.9 kg
Cell culture vessels	6-well, 24-well, 96-well, Petri, IBIDI
Software	Hstudio™

Cells	Monolayer of adherent cells
Computer Windows	7-10 64-bit, 8GB RAM
Incubator	Access port for cabling
Operating Temperature	10 – 40° C
Operating Humidity	Max 95%

## HOLOMONITOR GIVES A TOTALLY NEW DIMENSION TO OUR WORK

*Prof. Stina Oredsson, Department of Biology, Lund University, Sweden*

### Motorized XYZ-stage (optional)

Travel range	100 × 70 × 10 mm
Repeatability	5 μm
Dimensions (L × W × H)	260 × 200 × 180 mm
Weight incl. base unit	5.5 kg
Cell culture vessels	6-well, 24-well, 96-well, Petri, IBIDI

## About FANDA

**Aria Fan Varzan** is a part of FANDA, which is an international group in the field of distributing applied science's high-tech products, we are focused on bringing useful technologies and sciences based on the vision of "making better life by applied science", this is our group's vision that we are committed to achieve this vision in our daily works.

**NanoScience:** introducing hybrid, microscopic, macroscopic and spectroscopic techniques to bring technologies and knowledge of using high tech analytical instrument and their cutting edge applications in the field of pure science research, Photovoltaic and solar cell, Petroleum, Environment, Pharmaceutical, food,.... By holding different professional academy to push these fields's knowledge one step forward to have better life by NanoScience (analytical instrument).

**BioScience:** making cell therapy easy and feasible field for researcher and help to develop clinical progress in this field in middle east by preparing necessary infrastructure about; knowledge, Facilities, materials and... by importing, training and manufacturing requirement, we hope our daily works ended to have many cell therapy clinics that can help people to have better life by BioScience (advanced medicine therapy) by 2021.

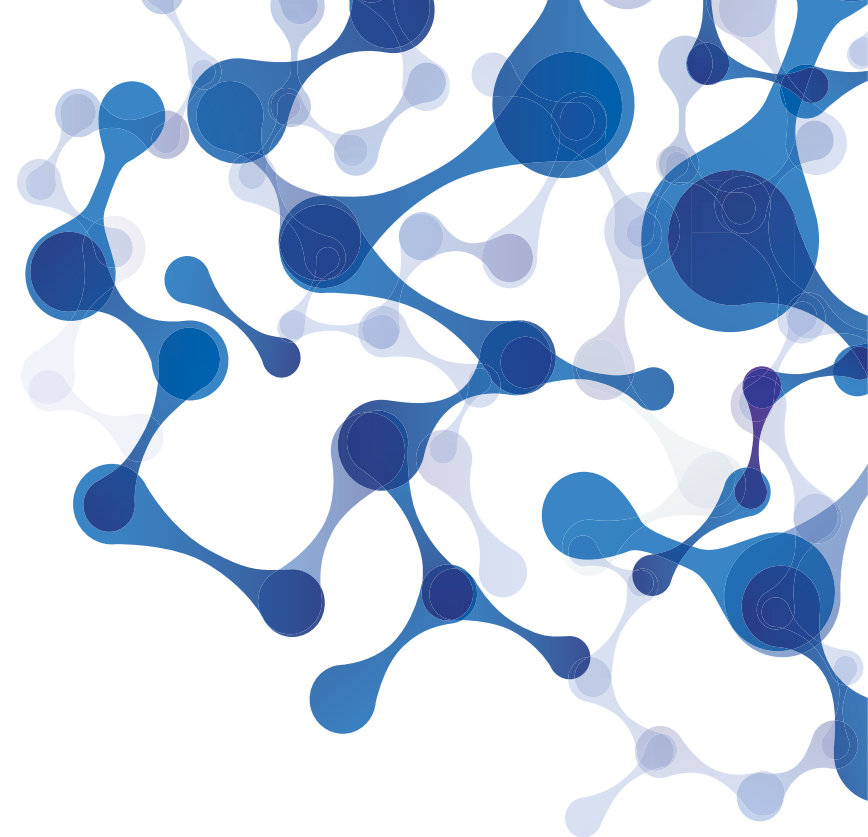
**NeuroScience:** introducing Hybrid science and innovations with bringing latest knowledge to make this science feasible and usable for scientist and specialist in this field and help people using new scientific methods for their old problems, we hope Neuroscience get well known field in this territory by our daily works and people feel it in their daily life by 2021.

**PlasmaScience:** we have a team of motivated and talent scientists who are committed to find new solutions for daily problems of middle east people by magic of PlasmaScience, we have interesting solutions to make better life for middle east people by PlasmaScience. Aria Fan Varzan is a part of FANDA, which is an international group in the field of distributing applied science's high-tech products, we are focused on bringing useful technologies and sciences based on the vision of "making better life by applied science", this is our group's vision that we are committed to achieve this vision in our daily works.



# FANDA SCIENTIFIC

"Where Life Meets Science"



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## AFV

Aria Fan Varzan

"To Make a Better Life by Applied Science"



NANO



BIO



PLASMA

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