



Understanding the Processes of Life!

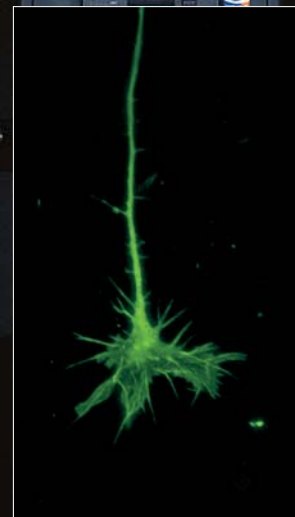
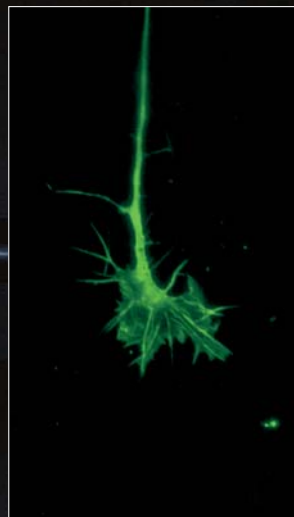
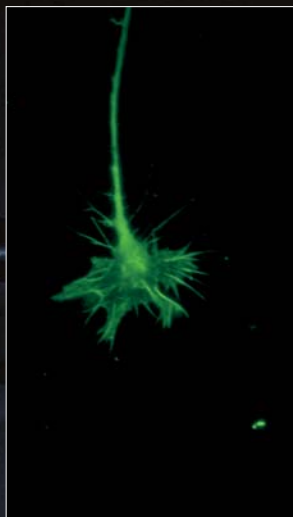
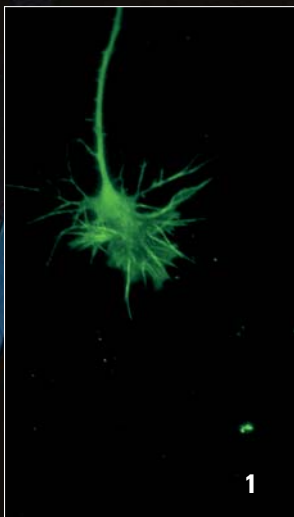
The Leica AF6000 Series – New Dynamics in Live Cell Imaging

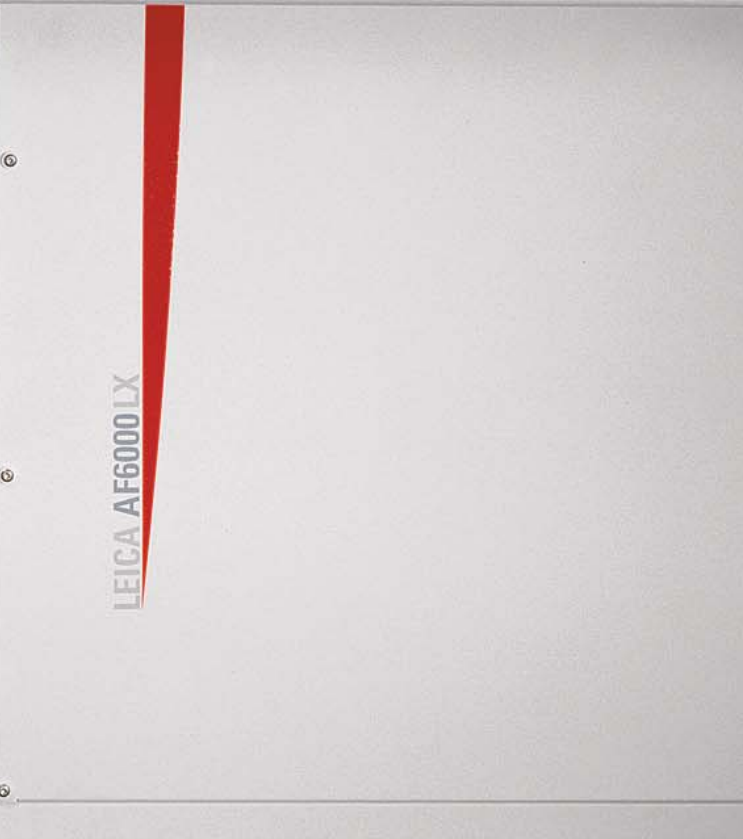
Leica
MICROSYSTEMS

Leica AF6000 LX



- Ultrafast Image Acquisition and Dynamic Experimentation
- One Platform for Widefield Fluorescence - Flexible and Upgradeable
- Complete Application Suite
- Intelligent and Intuitive Interface





Research today

Bio-medical researchers using Advanced Widefield Fluorescence Systems today face the challenge of speed in two ways: whilst the experiments demand fast live cell imaging with superior stability and image quality, the speed of generating results and publications has become equally important.

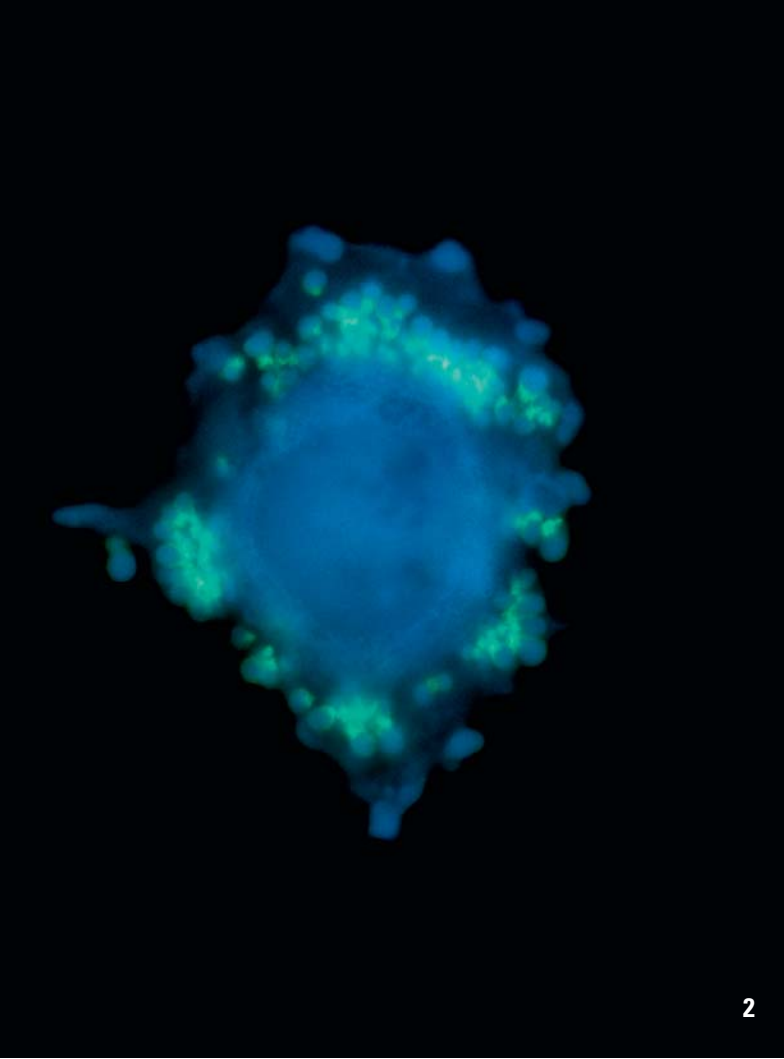
Both aspects call for reliable, ergonomic high-performance systems, which deliver consistent high-quality results in the shortest time.

These criteria have been our guidelines in developing the high-performance series of AF6000 Fluorescence Workstations – complete and integrated system solutions consisting of a full range of application software and dedicated high-speed acquisition hardware, complimented by highly optimized microscopes and cameras.

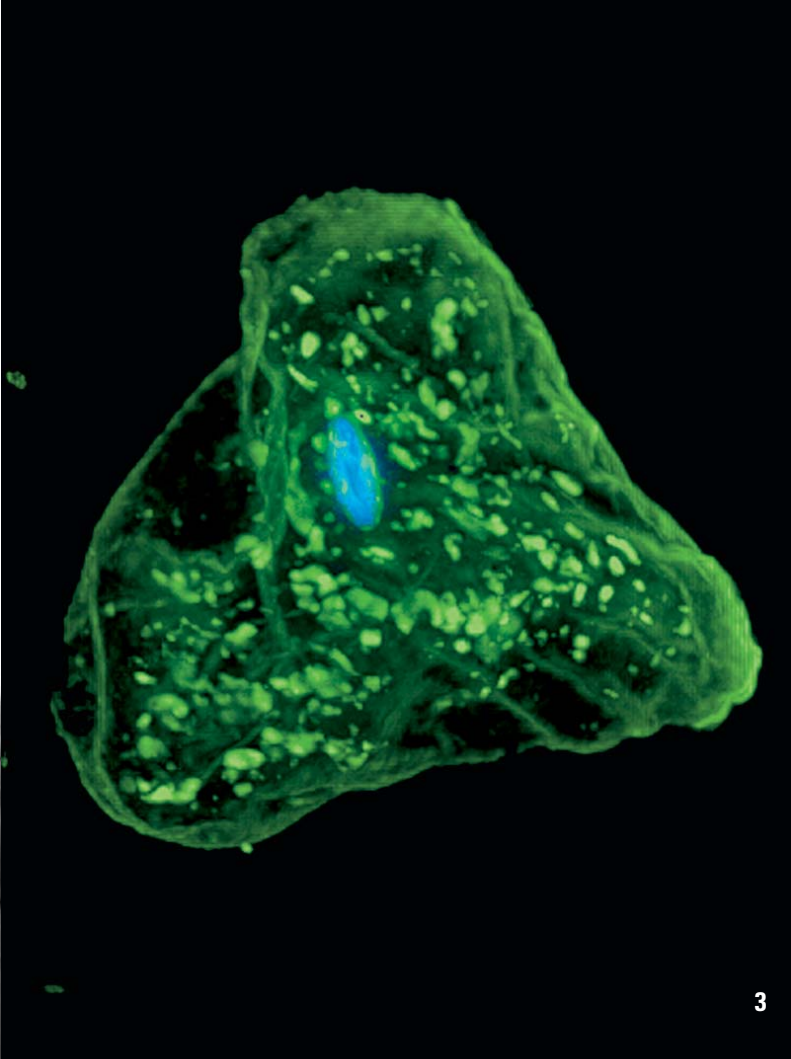
New Dynamics in Live Cell Imaging

Designed to meet your specific needs

Working closely with leading scientists in biological research, the Leica AF6000 series provides solutions that can change with your evolving research requirements. With each component specifically selected and optimized for it's suitability for this demanding field, the Leica AF6000 and AF6000 LX offer unrivalled ease of use even for the most complex applications in fluorescence.



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At Leica Microsystems, we want you to be able to concentrate on what is really important – your results. That’s our goal in developing one platform to suit all your advanced life science research requirements. The Leica AF6000 series is offered both as application software alone or as a series of fully configured imaging systems. Whichever you select, the range is modular by design for full flexibility. Two configurations are available, Leica AF6000 and Leica AF6000 LX, which can be further customized via a range of optional application software modules and hardware options.

Leica AF6000

Configurable to all your requirements and extremely flexible for a large variety of fluorescence applications, the modular Leica AF6000 system is available for both upright and inverted automated microscopes. The range starts with the Leica AF6000 application software and continues up to completely integrated imaging systems.

Leica AF6000 LX

The Leica AF6000 LX is the system solution for advanced live cell imaging and analysis. Based on the top of the range inverted microscope, it combines the best possible hardware components for this demanding branch of research imaging, with the highest level of integration for unequalled performance.

One Platform for Widefield Fluorescence – Flexible and Upgradeable

One integrated and upgradeable platform

We aim to make things as easy for you as possible – that’s why we include the same application software right across our product range, from widefield to confocal. The benefit is obvious – once familiar with the ergonomic software, switching between any system in our product range will be fast and effortless due to the intuitive interface and guided workflow.

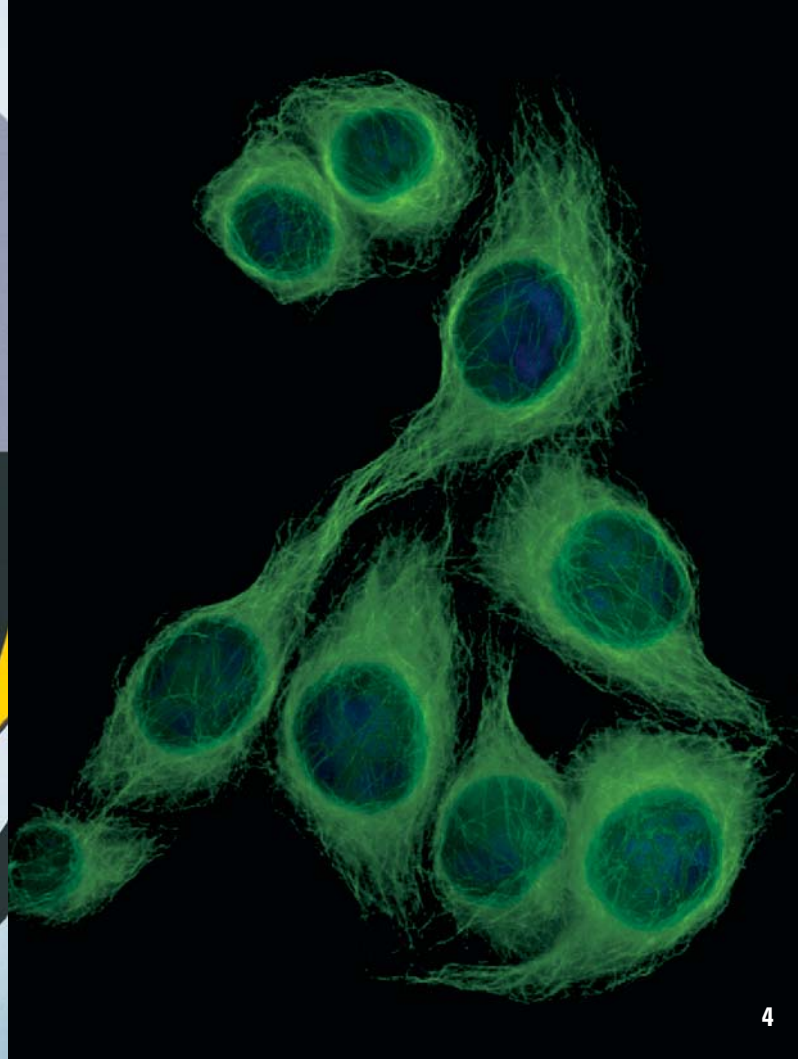
All imaging systems can be upgraded in functionality with the addition of optional software and hardware modules. An upgrade path is available between the two systems, ensuring your changing research needs can be met at any time. So, whatever your fluorescence imaging needs are or will be in the future, Leica Microsystems has the solution for you.



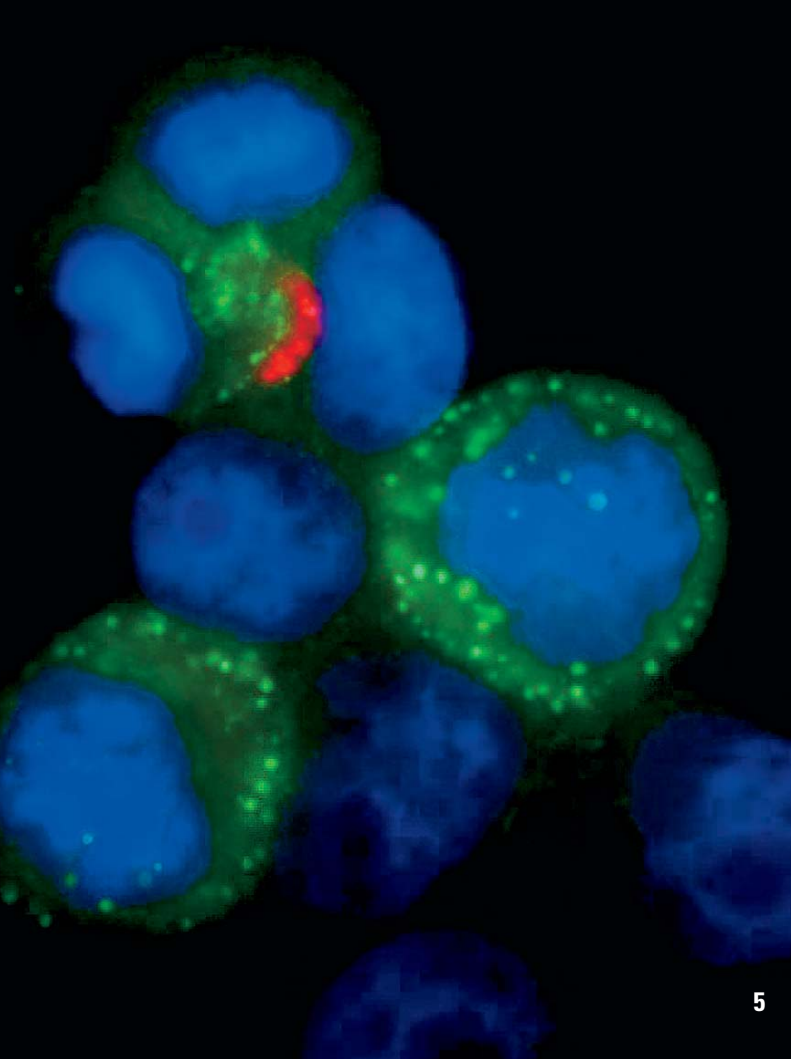
“I need to perform high resolution 3D-deconvolution microscopy in time while keeping the cells in optimal conditions. Leica Microsystems provides the right tool for my live cell research.”

Eef Parthoens

Department for Molecular Biomedical
Research (DMBR)
VIB - Ghent University
Ghent, Belgium



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Developed in consultation with leading laboratories, the Leica AF6000 offers true flexibility of configuration and high ergonomics. Designed to completely harmonize microscope, camera and application, this new system is available as application software only or as a completely integrated workstation.

The Leica AF6000 software has a scaleable architecture. Choose only what you need to meet your current requirements. Leica AF6000 imaging systems are complete and include all required components for fluorescence imaging, from specially selected computer components to application specific cameras and peripheral hardware with options for both single and dual monitor displays.

Highly integrated control of the Leica microscope range is included in the core application and is compatible with the Leica DM6000 B and DM5000 B upright research microscopes and the DMI 6000 B and DMI 4000 B inverted research microscopes. Optimal Leica digital camera systems have been selected for both monochrome and color imaging with the Leica DFC350 FX and Leica DFC300 FX for dedicated acquisition at high speed and low light levels.

Leica AF6000 – A Complete Application Suite

What you need, when you need it.

The Leica AF6000 meets the requirements across all fluorescence applications, from multi channel imaging, to time lapse and z-stacking. A wealth of features are included as standard for image documentation, quantification, enhancement and analysis.

The AF6000 application software is fully designed for multi-dimensional imaging, allowing easy capture, storage and review of large amounts of data. Adding a motorized stage will open up the possibility of imaging at multiple sites. Optional modules for deconvolution, 3D visualization, motion analysis, channel unmixing and colocalization will extend your analysis capability.

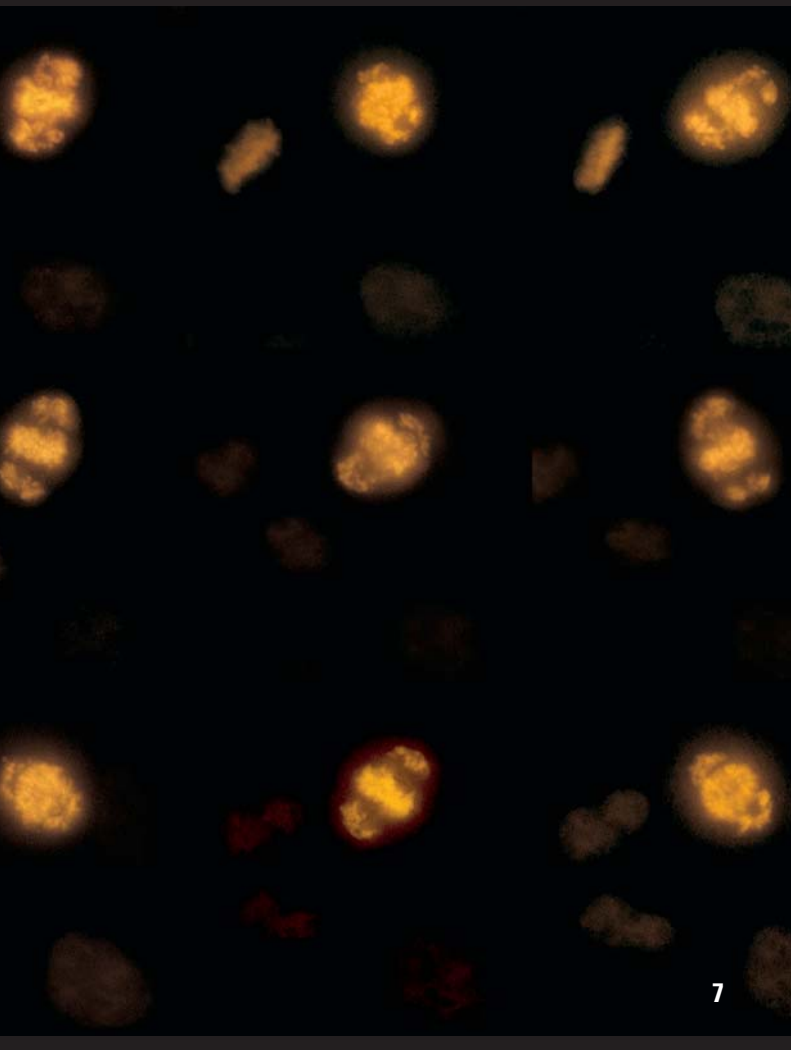
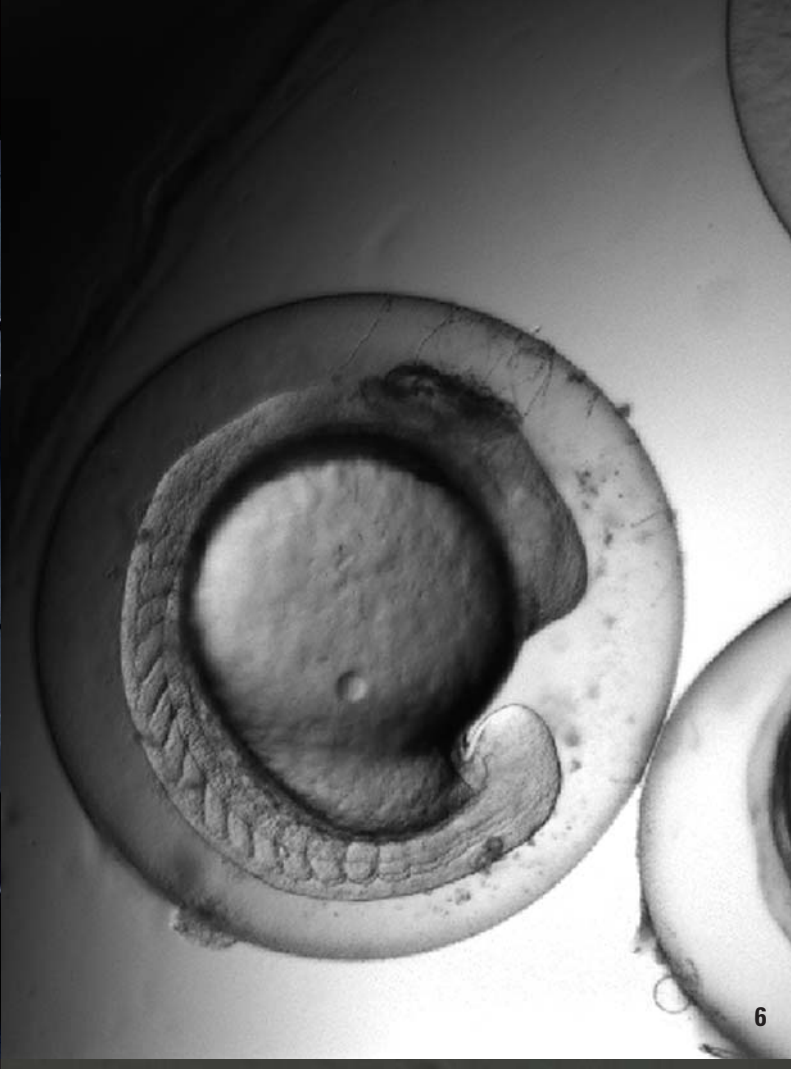
- Highly intuitive application software with a guided workflow interface
- Acquire 3D information with an easy-to-use z- stacking dialog
- Perform time lapse experiments and generate AVI movies
- Mark and Find capabilities for multi site experiments
- Full range of enhancement tools
- Image measurement and presentation features
- A range of advanced deconvolution options
- Display and interact with 3D data volumes with the 3D Visualize package
- Application options for colocalization, spectral unmixing and motion analysis



“ Our aim is to understand molecular interactions in cells... where excellent equipment is a basic necessity.”

Oliver Eickelberg

Department of Medicine II
Giessen University School of Medicine
Giessen, Germany



Looking at live cells requires the most advanced application software, optics and accessories available to science. Hurdles such as photo toxicity, low light intensity, stability and acquisition speed must be overcome to ensure accurate and meaningful results. In close cooperation with renowned researchers, Leica Microsystems has designed the Leica AF6000 LX to set new standards for live cell imaging and analysis. This ultra fast system, offers the ultimate in hardware and software integration, whilst still offering a range of carefully chosen options to suit your needs.

Dynamic experimentation

You never know what will happen during the course of a live cell experiment, but you know that you should be prepared for anything. Only full flexibility during your time-lapse experiment will enable you to change parameters in an instant. The Leica AF6000 LX Live Data Mode module is included as standard and allows you to interactively monitor, log and change system behavior in response to what you see for dynamic experimentation.

Leica AF6000 LX – Ultrafast Image Acquisition and Dynamic Experimentation

Unique z-positioner

Fast cellular processes in 4D demand components that are fully up to speed. Our new and unique z-positioner enables ultra-fast and highly precise z-positioning for all objectives and has an extended travel range of 250 microns. It is compatible with chambered coverglass systems, petri dishes and a range of live cell environmental chambers.

Unparalleled stability

The Leica AF6000 LX is based on the Leica DMI 6000 B inverted microscope with the Stability Manager, which offers a z-drift compensation mechanism for outstanding stability. Add the optionally available anti-vibration table and the climate chamber and you have the best possible solution for long-term time lapse.

- Ultra fast wavelength changing
- Choice of application specific cameras
- Full range of live cell microscopy accessories
- Dedicated live cell objective
- Highly interactive and flexible time lapse programming
- Application solutions for FRET, motion analysis and colocalization
- Full access to hardware components during live cell experiment
- Fully embedded into the live cell's world, utilizing trigger signals in and out for example to control micro manipulators
- Fast xyt-imaging and Live Data Mode
- Stability manager for outstanding z-stability



“I was amazed by the hardware performance and especially the z-stability of the system allowing us to do live cell imaging over several days.”

Christoph Bauer

University of Geneva – Science II
Geneva, Switzerland

Quick access, in record time

In today's laboratory, time is a crucial factor. With its clear and intuitive interface, the Leica Application Suite Advanced Fluorescence (LAS AF) will guide you through every step of your working process, leading you to quick and reliable results. Designed with the ergonomics of laboratory imaging in mind, the application software leads you through set-up and analysis processes and will have all members of your team up to speed in record time. The Leica LAS AF software shares its look and feel with all other software available from Leica, from simple microscope control applications, through to the most complex integrated systems for confocal imaging.

Intelligent and Intuitive Interface



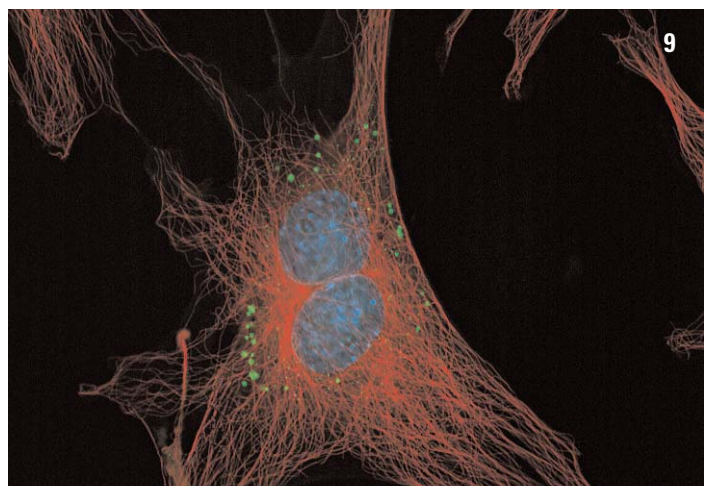
Keeping track

Instant access to your data is possible, as your results are easily accessible and can be exported in standard file formats. You can even review captured images during acquisition enabling you to make important decisions about the course of the experiment.

All settings are stored so experiments can be easily repeated. Calling on experiment logs and image details or summaries will provide you with detailed information about your actions during any experiment. You can have complete confidence in any further analysis you carry out due to the accuracy of our calibration. Advanced processes such as deconvolution also benefit. No further input of data is required as it's always there and always calibrated.

Online help and more

Whilst working with our software, context sensitive help is available. For more complex tasks, wizards can be called upon for application-orientated explanations and help, making even the most intricate experiments highly manageable.



Your research is unique and you require full configuration flexibility, so the core functionality of both the Leica AF6000 and AF6000 LX can be expanded by the addition of any number of the following optional application modules.

Live Data Mode

- Change the course of an experiment “on the fly”
- Online generation and graphical display of measurements
- Perform physiology experiments and analysis

3D Visualization

- 3D rendering and dynamic user interaction of volume
- Compile multi-channel 3D movies

Colocalization

- Visualize and quantify colocalized fluorochromes
- Determine the degree of colocalization by statistical data

Application Modules

Dye Finder

- Eliminate crosstalk between fluorochromes with a proprietary unmixing algorithm
- Differentiate between dyes with overlapping spectra

Deconvolution

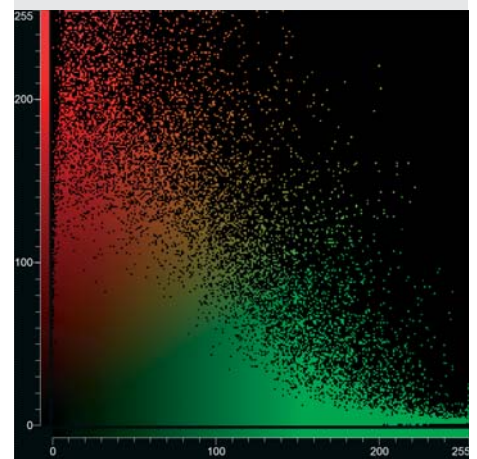
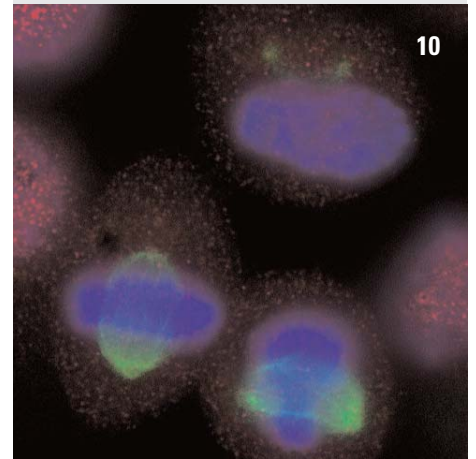
- Remove haze and blur by reassigning scattered light
- Fully integrated deconvolution algorithm using adaptive calculated or supplied PSF

FRET

- Application module for the acquisition and analysis of FRET samples

Motion Spy

- Track cells and measure speed, distance and center of gravity
- Analysis of motion and morphology



2D-cytofluorogram





Some of our most exciting innovations have been inspired by what our customers have to say. Listening closely to their wants and needs has helped improve our work far beyond technical research and development. It has also helped us increase the efficiency of our service and support. So if there is anything we can do for you, let us know. We're here to listen – and to help. After all, we want to continue raising our standards.

The range of services available at Leica Microsystems is wide, and we are constantly working to expand it. From technical support to training services, you will find everything you need to get the most out of your Leica products.

Leica customer service

We're just a call away – wherever you are. Simply give your national Leica Microsystems call line a ring to get superior engineering and applications support or to contact our sales and applications specialists.

Operation and Application Training

We also provide in-depth training for getting the most out of your system and applications.

Taking Service to a Higher Level

Maintenance contracts

Various levels of maintenance are available – from once-a-year minimum maintenance to our all-inclusive contract. Talk to your local service manager about which contract will be best for you.

Tried and tested

Our pre-shipment quality assurance tests and professional on site installation make sure that you can work immediately with your new Leica AF6000 or AF6000 LX system. Initial training is an important part of this and makes certain that your system is properly installed, calibrated and ready for research as fast as possible.

Up and running

Should you need to call on us for technical service, we know your system's history. Our database ensures we can get your system up and running as quickly as possible, thus minimizing the impact on your work.



“Technical service, application support and an open ear for any question is an attitude, which we appreciate from a supplier. Leica has matched our expectations.”

Dr. Norbert Perrimon
HHMI
Harvard Medical School
Department of Genetics
Boston, MA, USA



Leica AF6000



Leica AF6000 LX

Acknowledgements

We gratefully acknowledge following scientists for providing images:

- 1** Chick DRG neuron, growth cone of an axon after 3, 6, 9, 12 min
Green: Actin, YFP
Courtesy of Kazumasa Ohashi, Graduate School of Life Sciences, Tohoku University, Japan
- 2** Blebbing HeLa cell (live cell)
Green: Fascin, YFP
Blue: LIMK, CFP
Courtesy of Kazumasa Ohashi, Graduate School of Life Sciences, Tohoku University, Japan
- 3** Cheek cell (live cells)
Green: ER and mitochondria, DIOC6
Blue: Nuclei, DAPI
Courtesy of Christoph Bauer, University of Geneva, Switzerland
- 4** The breast cancer cell line MCF7
Green: Anti tubulin antibody, FITC
Blue: Nuclei, DAPI.
Courtesy of the Group of Hilary Russell and Peter Hall Centre for Cancer Research and Cell Biology Queen's University Belfast Belfast, Ireland
- 5** Cancer cell line
Green: Anti tubulin antibody, FITC
Blue: Nuclei, DAPI.
Red: TRITC
Courtesy of the Group of Hilary Russell and Peter Hall Centre for Cancer Research and Cell Biology Queen's University Belfast Belfast, Ireland
- 6** Zebrafish development by phase contrast over 18 hours.
Courtesy of Jen McLeish, Bioimaging Facility, University of Manchester, UK
- 7** HeLa cell undergoing aberrant mitosis following RNAi of CENP-F, image stack every 2 minutes
Yellow: Tubulin, GFP
Courtesy of Sarah Holt, Bioimaging Facility, University of Manchester, UK
- 8** Plant root tip (live cell)
Green: Endoplasmic reticulum, GFP
Phase contrast
Courtesy of Jean Jacques Ebolo, Bioimaging Facility, University of Manchester, UK
- 9** Bovine Pulmonary Endothelial cells.
Red: Mitochondria labeled MitoTracker®
Red CMXRos
Green: F-actin labeled with green-fluorescent BODIPY® FL phalloidin
Blue: DAPI labeled nuclei
This image was enhanced using 3D blind deconvolution
- 10** Human cervical carcinoma cells labeled for microtubules (green), the homeoprotein HOXC10 (red), and DNA (blue).
Courtesy of Dr. Fiorenzo A. Peverali, Istituto di Genetica Molecolare, Consiglio Nazionale delle Ricerche, Pavia, Italy.

Achtung das ist ein Einklapper
70 mm, nach linkseingeklappt

Leica Microsystems – the brand for outstanding products

Leica Microsystems' mission is to be the world's first-choice provider of innovative solutions to our customers' needs for vision, measurement, lithography and analysis of microstructures.

Leica, the leading brand for microscopes and scientific instruments, developed from five brand names, all with a long tradition: Wild, Leitz, Reichert, Jung and Cambridge Instruments. Yet Leica symbolizes innovation as well as tradition.

Leica Microsystems – an international company with a strong network of customer services

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and representatives of Leica Microsystems
in more than 100 countries.

The companies of the Leica Microsystems Group operate internationally in four business segments, where we rank with the market leaders.

● Microscopy Systems

Our expertise in microscopy is the basis for all our solutions for visualization, measurement and analysis of microstructures in life sciences and industry. With confocal laser technology and image analysis systems, we provide three-dimensional viewing facilities and offer new solutions for cytogenetics, pathology and materials sciences.

● Specimen Preparation


We provide comprehensive systems and services for clinical histo- and cytopathology applications, biomedical research and industrial quality assurance. Our product range includes instruments, systems and consumables for tissue infiltration and embedding, microtomes and cryostats as well as automated stainers and coverslipers.

● Medical Equipment

Innovative technologies in our surgical microscopes offer new therapeutic approaches in microsurgery.

● Semiconductor Equipment

Our automated, leading-edge measurement and inspection systems and our E-beam lithography systems make us the first choice supplier for semiconductor manufacturers all over the world.

 www.leica-microsystems.com


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