

Leica DM RXA2 and DM RA2

Fully Automated Research Microscopes

Leica
MICROSYSTEMS

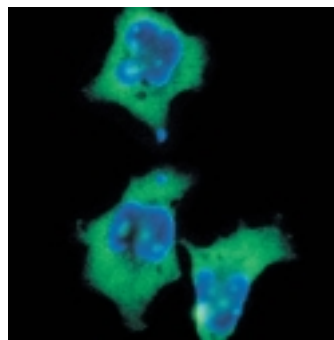
Leica DM RXA2 and DM RA2

Fully automated research microscopes

Leica Microsystems automated research microscopes have always met the highest standards. Besides producing brilliant images, these high level microscopes offer the ultimate in operating convenience and modularity. The latest instruments in this class, DM RXA2 and DM RA2, were designed to continue Leica's successful automation concept specifically for fluorescence applications. A new tube with two photo exits and a proximity sensor for shutter automation (Leica patent) are two examples of the latest innovations.



Motorized 8-position fluorescence cube changer with zero pixel shift



28 S ribosomal RNA in Hela cells;
FITC/DAPI

Leica Design by Christophe Apothéoz

Shutter switches automatically when you approach

The proximity sensor, which was specially designed for fluorescence applications, is attached to one of the eyepieces. The moment you look through the eyepieces, the infrared sensor sends a signal to the microscope. Depending on the configuration, a shutter is switched so that light-sensitive samples are illuminated only when necessary, preventing unnecessary quenching and consequent intensity reductions.

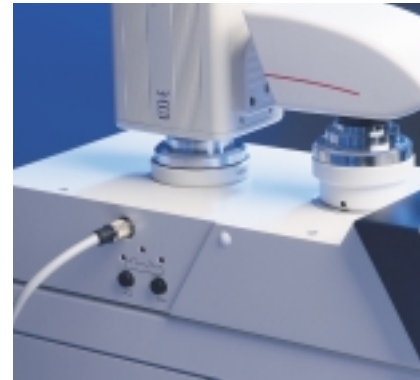
The proximity sensor can also be used to control the tube exits. This is particularly convenient for microscope systems where the image signal is displayed live on a screen via a camera. When you approach the eyepiece, a beamsplitter switches the light from the photo exit to the eyepieces. A special advantage for low light fluorescence applications is that 100% of the available light is always directed to the tube exits.

The suitable fluorescence cube is always available

The motorized fluorescence cube changer can be fitted with up to 8 different fluorescence cubes. The selection of cubes can be predefined by software or directly controlled by convenient controls mounted on the microscope – a particular advantage for complicated measurement series or multi-user functions. All the fluorochromes in use should then be covered by the 8 positions, thereby avoiding the need to interchange cubes during measurements.

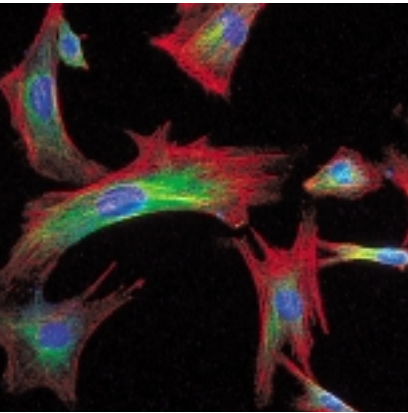


Proximity sensor for fluorescence applications (Leica patent)

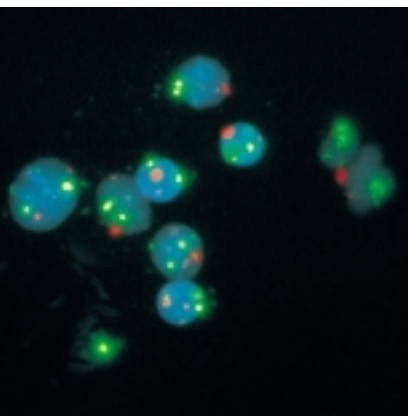


Motorized tube with two photo exits. The beamsplitter can direct the light either 100% to the eyepieces, 100% to photo exit 1 or 100% to photo exit 2.

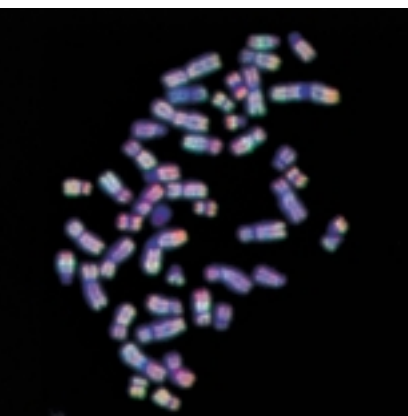




Fibroblasts, FITC, TRITC, DAPI



Interphase FISH



Multicolor FISH

The Applications

Fluorescence microscopy has developed into a key research and diagnostic tool. Leica's role in this development is to give users the highest possible level of quality, convenience and precision. For complex research tasks, Leica offers an 8-position motorized and coded fluorescence turret, the option of controlling the microscope via programmable software, and first-rate optics.

Leica FW4000 – The Total Fluorescence Imaging Solution

The importance of a controlled automated sequence of functions is growing, with increasing demands for higher detection limits and microscope control in modern fluorescence microscopy.

In combination with the Leica FW4000, the Leica DM RXA2 or DM RA2 offers an integrated modular solution to meet a wide range of fluorescence imaging requirements. For multi wavelength imaging, time lapse experiments, and 3D imaging for the capture of image stacks, Leica FW4000 is a powerful solution that harnesses all fluorescent imaging needs.

Leica CW4000 – The Total Cytogenetics Imaging Solution

In cytogenetics, fluorescence in-situ hybridization techniques elucidate chromosomal abnormalities by using fluorescently labeled pixels. Advanced applications such as multi colour FISH and comparative genomic hybridization also require a high level of microscope automation, in combination with the Leica CW4000 cytogenetic workstation.

The combination of hardware and software functions of the new Leica DM RXA2/DM RA2 facilitates complex tasks such as multi wavelength imaging, the acquisition of 3D image stack and many others.



Leica CW 4000 –
Easily achieve superior results

Leica TCS SP2 – the solution for confocal microscopy

The high degree of automation and motorization makes the new Leica DM RXA2/DM RA2 an ideal platform for applications in confocal microscopy such as multi-dimensional imaging or optical sectioning. Confocal imaging involves scanning one focal plane after another with a laser beam. Image information that is not in the focal plane is cut off, resulting in extremely high contrast images. These optical sections can be viewed as a single image or compiled into 3D images with suitable Leica software.

Leica QWin – Image Processing and Analysis Software

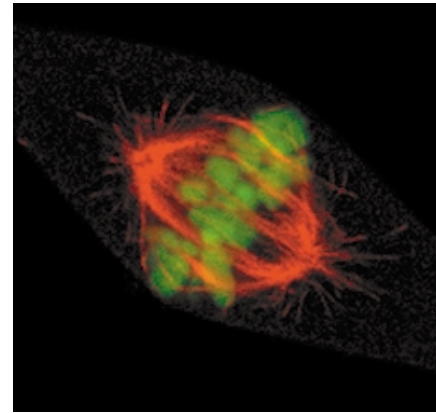
Leica QWin image processing and analysis software provides superior solutions for quantitative microscopy. In conjunction with the Leica DM RXA2 and DM RA2, Leica QWin performs multi-parameter measurements combining specimen selection, scanning, and focusing, for entirely automatic operations.

Leica QWin is available in four editions, from Lite to Professional to meet your performance requirements and budget.

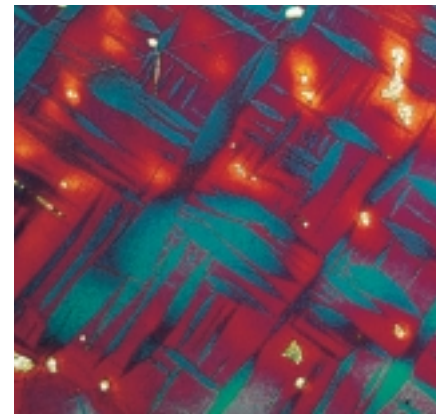
The complete solution offers unrivalled performance particularly in applications requiring fast analysis, high sample throughput and unattended operation. Automation brings added benefits to the solution for improved laboratory productivity and using a Leica DM RXA2 or DM RA2, gives control of the stage, focus, lamp brightness, filter block and shutter.

Leica QUIPS

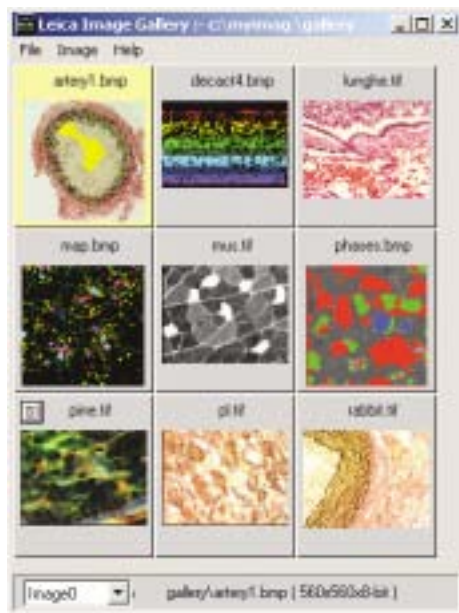
Leica QUIPS for automatic routine operation, is an interactive macro-programming facility of Leica QWin standard, which enables the user to create fully automatic routines for any repetitive or user intensive analysis task, with the steps automatically memorized to minimise the typing required. This allows the motorisation capabilities of the Leica DM RXA2 or DM RA2 microscope to be easily customised to the exact needs of your application.



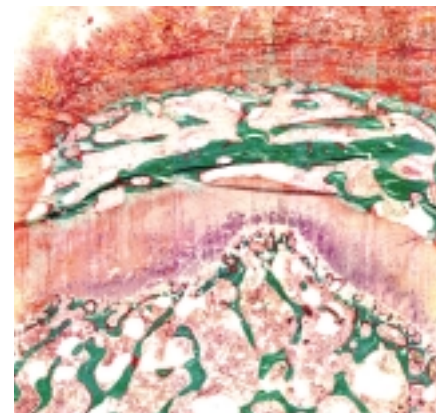
Mitosis of a fibroblast (metaphase);
DAPI, TRITC



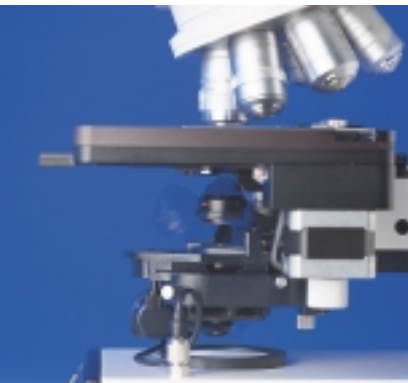
Segregations in the dendritic cast structure of the magnesium alloy AM50, ion etching



Leica QGallery



Mosaic-Images can be taken from a stage scan pattern and stitched into an overview or mosaic image for further analysis



Condenser with automatic condenser top changer



SmartMove: Ergonomic control element

Reduces hand movements

Ergonomics is another major consideration in the innovative development of our microscopes. All three axes of the motorized scanning stage, objective selection, lamp brightness and aperture diaphragm can be operated by one single control.

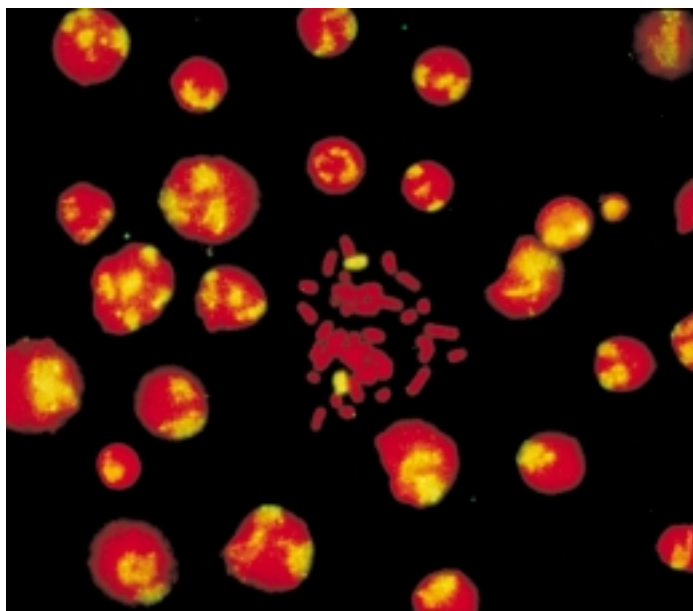
The condenser automatically swings the matching condenser lens for the selected objective into the light path. Parameters such as field and aperture diaphragm, brightness, parfocal offset, z drive and stage speed will, of course, be preset to match the objective.

On all automatic research microscopes, the control of the filter cube changer can be located in the most ergonomic position, i.e. on either side, right next to the focus wheel.

The objective nosepiece accommodates seven objectives. Intermediate magnifications are produced with the motorized magnification changer module. The four positions of this module can be occupied by a 1x, 1.25x, 1.6x tube lens, a Bertrand lens or a UV lens for laser coupling.

Simple solution for higher complexity

All motorized units can be PC driven. Firmware and software updates for microscope control can be downloaded free of charge from the Internet. The system utilizes an external electronic control unit that contains modules for the motorized functions as well as the power supply. This solution not only makes space for any extra hardware, but also facilitates application-specific configuration of the microscope or integration of system solutions. The separate use of the electronics box prevents the microscope from heating up and affecting the results, which is especially important for long-term observations and time lapse recordings.



Bone marrow FISH; FITC/TRITC

Technical Data Sheet

Specifications	Leica DM RXA2	Leica DM RA2
Contrasting Methods	Transmitted light: BF, DF, DIC, Pol Incident light: BF, DF, DIC, Pol, Fluo	Transmitted light: BF, DF, DIC, Pol Incident light: BF, Pol, Fluo
Focus drive	Motorized Dovetail for stage interchange Travel 25 mm Smallest increment 0.015 µm Max. speed: 5 mm/sec Max load: 4 kg	Motorized Fixed stage Travel 25 mm Smallest increment 0.015 µm Max. speed: 5 mm/sec Max load: 4 kg
Revolving nosepiece	Motorized, absolute coded Dovetail for nosepiece interchange 7-fold for brightfield objectives (thread M25) 6-fold for darkfield objectives (thread M32) Slot for DIC prisms and Pol compensators	Manual, absolute coded Fixed revolving nosepiece 7-fold for brightfield objectives (thread M25) No darkfield for incident light Slot for DIC prisms and Pol compensators
XY Stage	Motorized Stage exchangeable Direct stepper motor drive Outer dimensions: 234 x 157 mm Zero position defined by end switches Travel range: 76 x 50 mm Smallest increment: 0.3 µm	Motorized Fixed to microscope stand Direct stepper motor drive Outer dimensions: 234 x 157 mm Zero position defined by end switches Travel range: 76 x 50 mm Smallest increment: 0.3 µm
Electronic box CTR MIC	Separate control unit including: - motorized z-focus drive - motorized xy-stage - motorized revolving nosepiece - power supply for 100W - RS232C PC-interface	Separate control unit including: - motorized z-focus drive - motorized xy-stage - power supply for 100W - RS232C PC-interface
Control alternatives	Microscope including: - push-buttons for all motorized microscope functions - focussing wheel for z-level control Ergonomic XYZ control including: - push-buttons for objective change - illumination control - aperture control XY-Joystick including: - illumination control - push-buttons for objective change Z-control additional control for separate z-movement	Microscope including: - push-buttons for all motorized microscope functions - focussing wheel for z-level control Ergonomic XYZ control including: - illumination control - aperture control XY-Joystick including: - illumination control Z-control additional control for separate z-movement
Computer interface	RS232C	RS232C
Software tools	Free microscope Control Software and Software Developers Kit (SDK) for WINDOWS™ 95, 98, 2000, NT, XP	Free microscope Control Software and Software Developers Kit (SDK) for WINDOWS™ 95, 98, 2000, NT, XP
Controls integrated in microscope stand	Focusing wheel on both sides Objective change Reflector cube change LCD display for microscope status and teach in procedure	Focusing wheel on both sides Reflector cube change LCD display for microscope status and teach in procedure

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 five business segments, where we rank with the market leaders.

● Microscopy

Our expertise in microscopy is the basis for all our solutions for visualization, measurement and analysis of microstructures in life sciences and industry.

● Specimen Preparation

We specialize in supplying complete solutions for histology and cytopathology.

● Imaging Systems


With confocal laser technology and image analysis systems, we provide three-dimensional viewing facilities and offer new solutions for cytogenetics, pathology and materials sciences.

● Medical Equipment

Innovative technologies in our surgical microscopes offer new therapeutic approaches in microsurgery. With automated instruments for ophthalmology, we enable new diagnostic methods to be applied.

● 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.

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