Step Beyond Infinity >>

The new Leica M125, M165 C and M205 C are a step into a new dimension of stereomicroscopy.

Leica
MICROSYSTEMS

A Step Towards Infinity

Ever since their introduction by Horatio S. Greenough, stereomicroscopes have worked according to the optical principles based primarily on Ernst Abbe's research. For over a century, ingenious optics designers and engineers have worked to push magnification, resolution and image fidelity to the limit permitted by optics. In doing so, they have always been constrained by the interrelation between three factors: the higher a microscope's resolution, the lower the available working distance. If one increases the distance and resolution using larger objectives and lenses, the three-dimensional image seen by the observer becomes distorted. A cube becomes a tower, a flat surface curves toward the observer.

Limits are made to be broken.

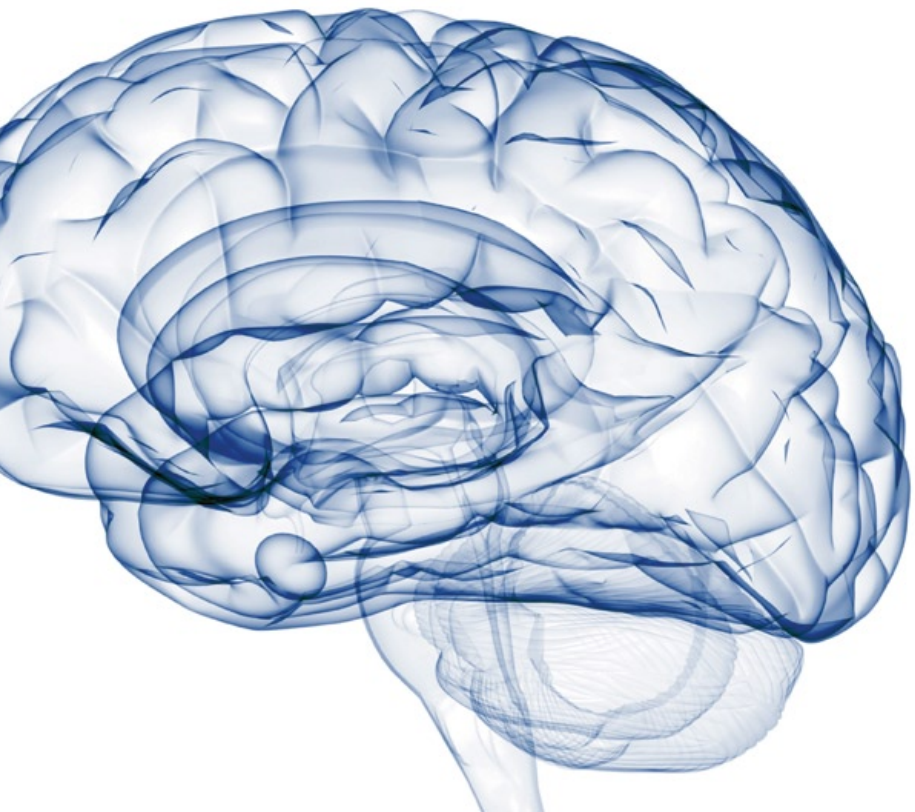
The Leica M205 C is the world's first stereomicroscope with a zoom range of 20.5×*. This accomplishment, however, was not enough for Leica's engineers. With the new FusionOptics™, they have succeeded in going yet another step beyond previous limits. In addition to the increase in magnification, the resolution, too, has been increased to up to 1050 lp/mm, which corresponds to a resolved structure size of 476 nm. Of course, this performance increase benefits your everyday work. Set up your specimens on the microscope with comfortable freedom of movement and discover details in stereomicroscopy that you could never see before.


Leica
Planapo 1.0x
SHUTTER

The human brain is a fascinating piece of work. Without interruption, it calculates a three-dimensional rendering of our environment from the data provided by both our eyes. What is truly remarkable, however, is the brain's ability to gauge situations with lightning speed based on the information it receives, and to react to such situations appropriately.

«Brain jogging» with the Leica M205 C

The design principle of the new Leica M205 C is based on the exceptional flexibility of the brain. The microscope assigns a different task to each of the two beam paths: the right channel contains an image with very high resolution, while the left channel provides very high depth of field. The brain then automatically gathers the best information from both sources and uses it to compose one image with very high richness of detail and depth of field.

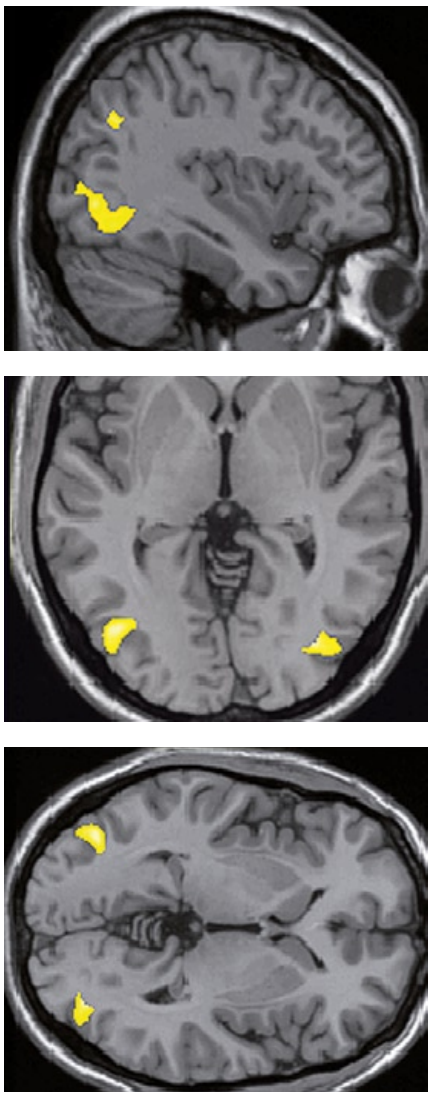


Juggling Increases Brain Size

Previous studies have assumed that humans build up brain mass during childhood, develop neurological networking through training during youth, can at best maintain this complexity during midlife, and will inevitably experience diminished mental performance as they continue to age.

Now, a study conducted by Dr. Arne May* of the University of Regensburg in Germany has shown that certain regions of the adult brain have the ability to build up brain matter through training. In a group of laypersons, who practiced juggling over a three-month period, structural changes in the cerebral cortex were identified after the training period. Astonishingly enough, the new brain matter formed primarily in the two areas responsible for vision and touch. Obviously, the difficulty in juggling lies in visually capturing and analyzing the balls' movements.

The Leica FusionOptics™ takes advantage of the flexibility of our brains and, as an added benefit, trains your mental performance capacity.



The areas marked in yellow are the regions in which new brain matter was shown to have been created. Courtesy of Dr. Arne May (University Clinic Hamburg)

* Dr. Arne May, «Jonglieren lässt Erwachsenenhirne wachsen», http://www.uni-protokolle.de/nachrichten/id/28051/

Leica M165 C: classic stereomicroscopy of the highest order

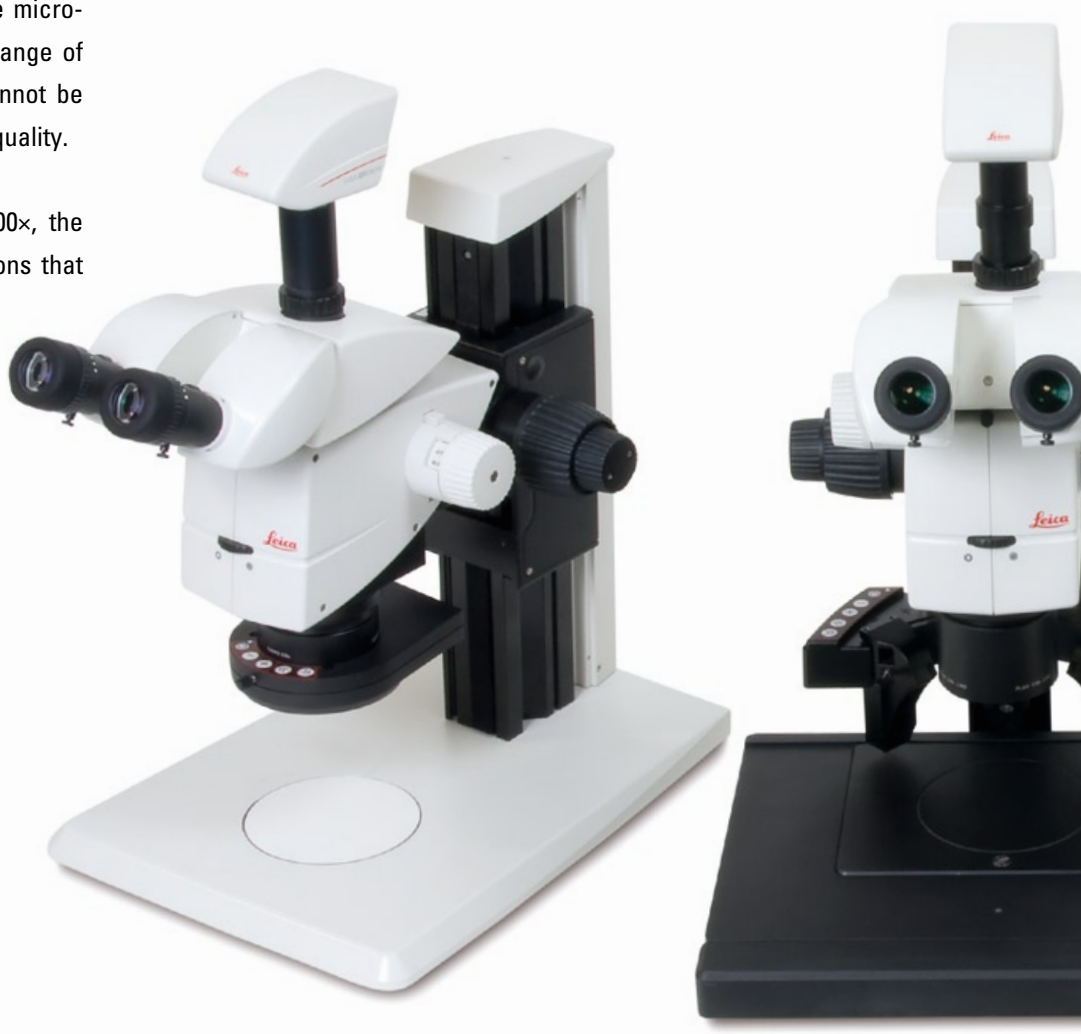
For those who wish to continue working with classic stereomicroscopes, the Leica M165 C is equal to almost every need. The optical principle of two symmetrical channels is the same as that of the Leica MZ16, but the zoom range and numerical aperture have been increased to 16.5:1, the second largest on the market after the 20.5:1 zoom range of the Leica M205 C.

Of course, the Leica M165 C is also compatible with the full range of cameras, objectives, tubes, bases and accessories. This means not only that you are sure to find a configuration solution for almost any task you have now, but you can also be confident that you will always be able to take advantage of the latest advances in the Leica M-series in the future.

Leica M125: one instrument for many tasks

Supreme performance is not always the most important requirement: in many routine situations, you simply need a tough, reliable microscope that is compatible with a wide range of accessories. Of course one feature cannot be compromised: the best possible optical quality.

With a magnification range of 8× – 100×, the Leica M125 is ideal for many applications that may be useful to you: from presorting mechanical components to analyzing plastics and detailed inspection of printed circuit boards, the Leica M125 provides consistently high-quality, detailed images of your specimens.



M125, M165 C and M205 C – the Leica M-series for all tasks

Leica M205 C: explore new realms with FusionOptics™

Whether you need a large work area with lots of space for manipulating specimens, or you must evaluate even the tiniest details, which were previously invisible without a light microscope: with the unique FusionOptics™ zoom, Leica Microsystems has succeeded in advancing stereomicroscopy to the next level.

Optics that were previously thought impossible have been realized in the Leica M205 C. With a zoom range of 7.8× – 160×, objectives from 0.63× – 5×, and an enormous selection of accessories, this instrument delivers exceptional versatility and superior performance.


LEICA M205 C
Planapo 1.0x

You Can Have It All at Once

High magnification with great ergonomic benefits

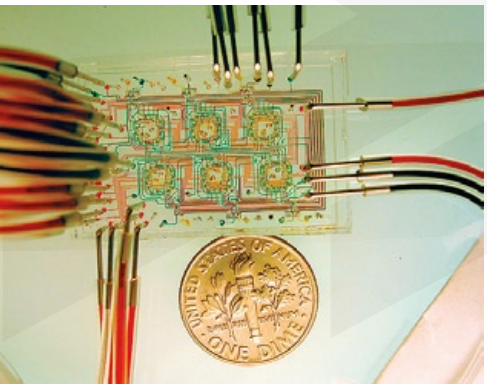
Conventional stereomicroscopy gives users a choice: They either choose high resolutions and richness of detail, or opt for a larger working distance to be able to manipulate the work specimen. The higher a microscope's resolution, the less free room there is between specimen and objective.

With a 1× objective, the Leica M205 C reaches magnification ranges that previously required high-magnification objectives. This has direct benefits for your everyday work. The Leica M205 C resolves structures of under one micrometer, while providing the user with 61.5mm of additional free room for specimen manipulation. Sorting and processing – even for the smallest details – can be carried out easily without changing objectives.

APO for all

To take full advantage of the performance capacity of the new instruments, all new M-series components are apochromatically corrected. Thus color seams and curvature of field are finally a thing of the past.

Up to Your Tasks. Put Us to the Test!

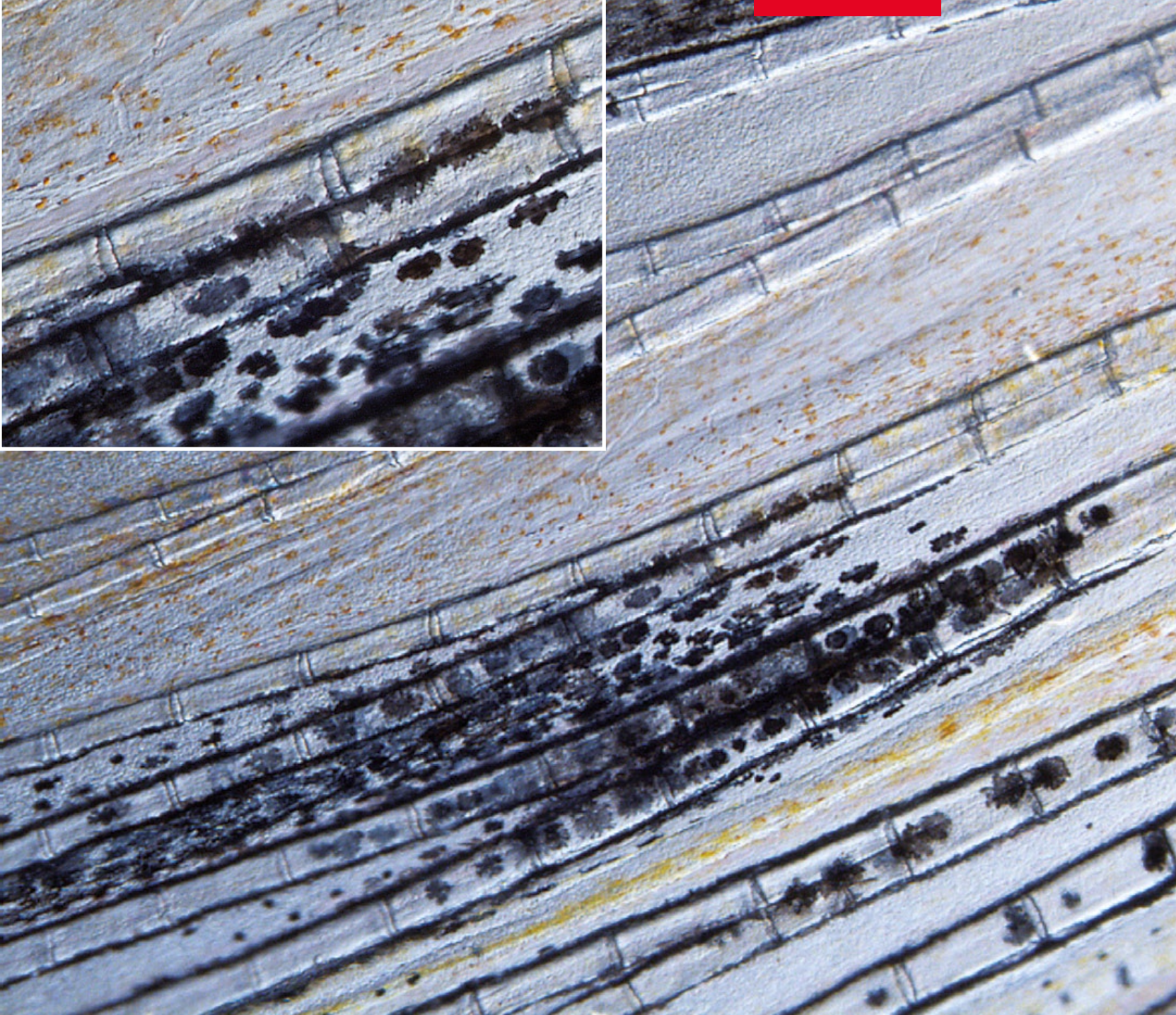


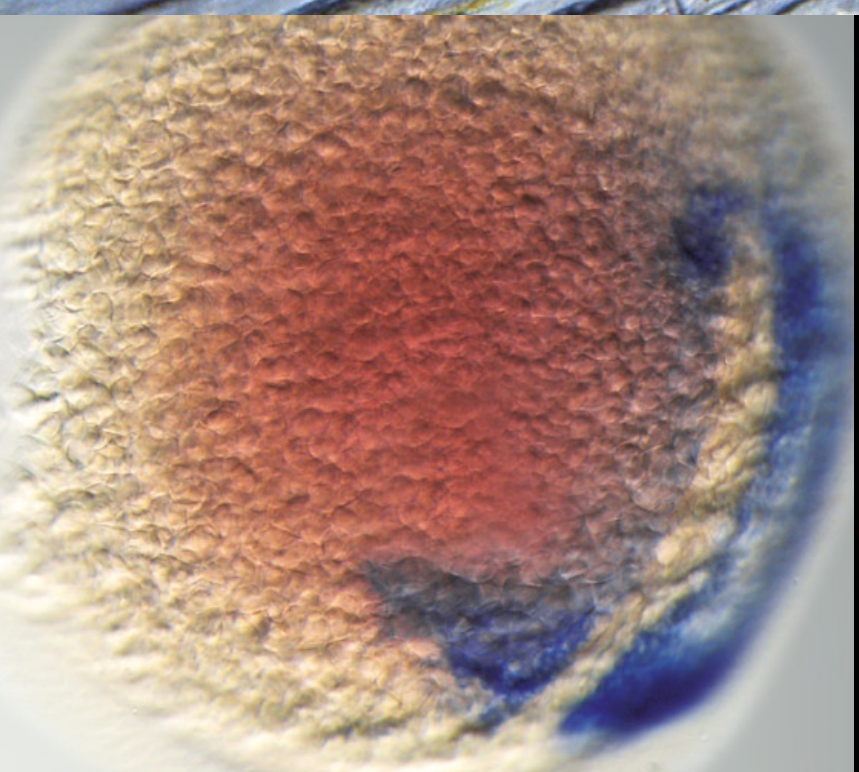
Microfluidics applications currently pose some of the greatest scientific challenges. Research in this field focuses on the manipulation of small quantities of fluids and their manipulation within small geometric dimensions. In many cases, it deals with the movement of fluids in channels with cross-sections of just a few micrometers. The focal points of microfluidics applications are in the following fields:

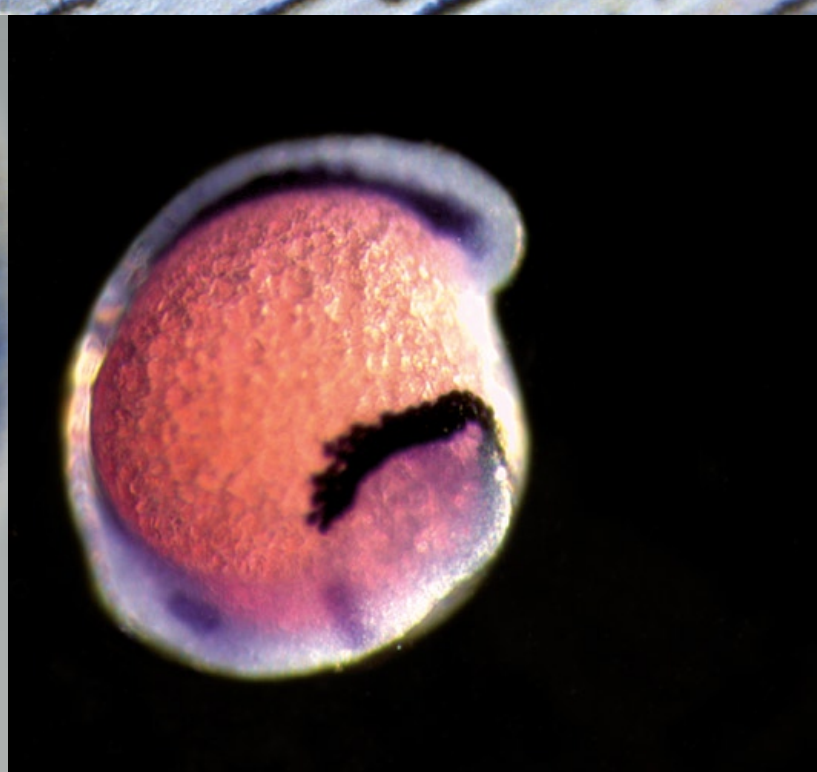
- Analytics/Diagnostics (electrophoresis, Lab-on-a-Chip)
- Chemistry (micromixers, reactors, heat exchangers)
- Pharmaceuticals
- Dispensing medication

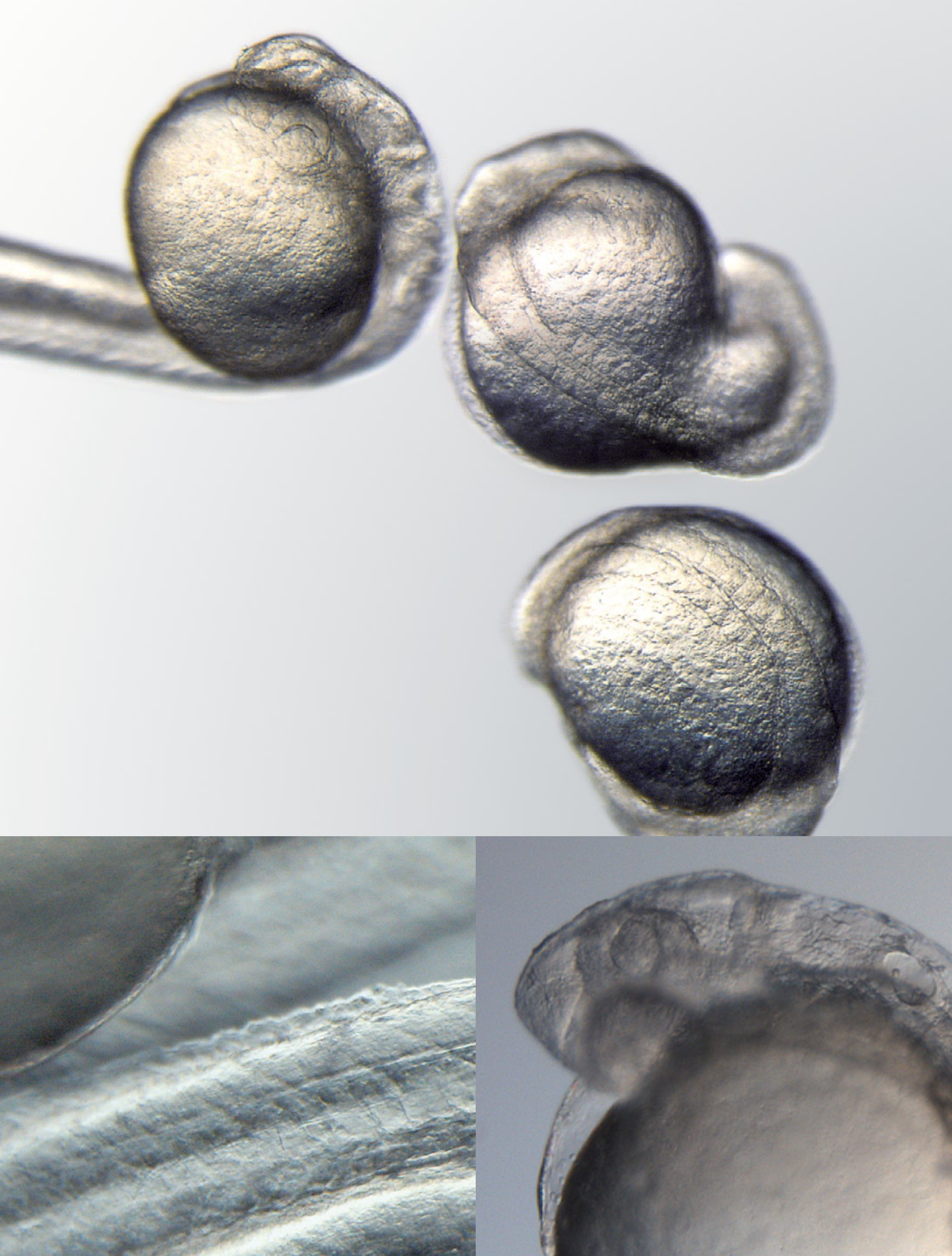
The use of microfluidics provides enormous help to new methods for analysis and control of biomechanical systems. The technology offers great advantages in terms of miniaturization and portability of experiments. Additional benefits are the capability for parallel analysis of biomechanical operations and, of course, the smaller amount of reagents required.

Thanks to the brilliance of the apochromatically corrected optics and the enormous optical resolution, the new Leica M125, M165 C and M205 C make it easy to check the interconnections on a chip. The high depth of field enables you to observe multiple superimposed channels and the large object field gives you the overview over the specimen you need. The Leica M125, M165 C and M205 C thus give you valuable time for other research tasks.









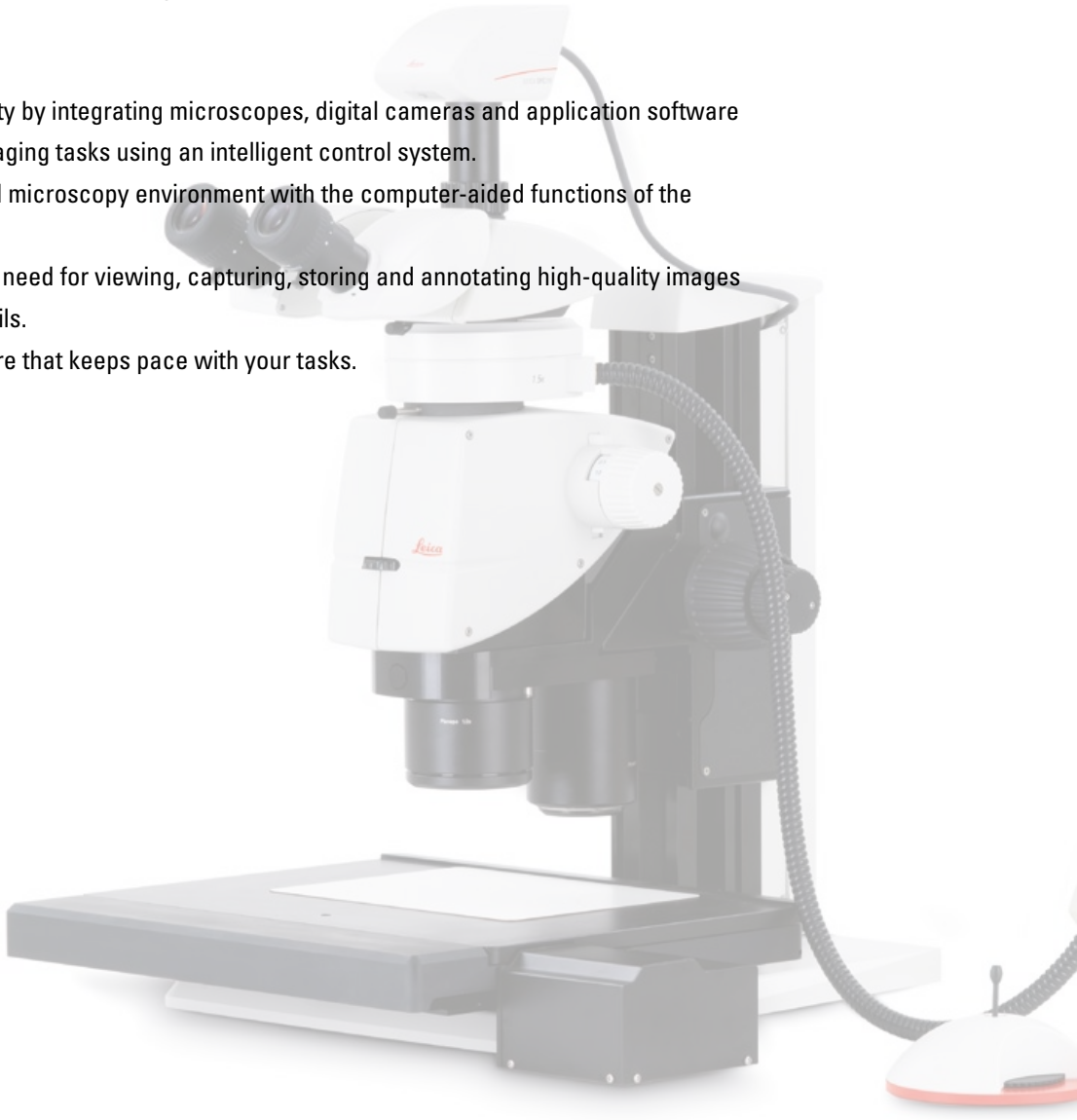
Leica Application Suite: the Cerebrum for Your Data

Integrated complete solution

Thanks to its versatility, the Leica Application Suite can be used for a wide variety of industrial applications. LAS' comprehensive range of image processing functions makes it faster and easier to visualize, process, measure and document digital images. The software monitors all Leica components that are connected to the computer, such as the stereomicroscope, objective changer, DFC camera, LED5000 illumination and motorized cross-stage. The data thus obtained are processed in LAS; to do so, all installed modules communicate with each other. Thus LAS is an intuitive solution that makes both routine and research analysis easier.

Features at a glance:

- LAS increases productivity by integrating microscopes, digital cameras and application software in order to coordinate imaging tasks using an intelligent control system.
- LAS automates the digital microscopy environment with the computer-aided functions of the Leica microscopes.
- One application is all you need for viewing, capturing, storing and annotating high-quality images in a gallery with thumbnails.
- High modularity – software that keeps pace with your tasks.



Technical Highlights of the Leica M125, M165 C and M205 C

Objectives: planapochromats, achromats

Stereomicroscope with the highest zoom

- 20.5:1 zoom allows overview and detail observation using one instrument

Numerical aperture of 0.35 (with 2× planapochromatic objective)

- One-of-a-kind resolution of 1050 lp/mm enables resolution of structures down to 476 nm

High magnification is taken into account in the design of the new, extremely stable focusing column

Rigid, sturdy mechanical structure

- Rigid, sturdy mechanical structure supports high optical performance
- Detail solutions such as integrated cable duct and complete integration of electronics keep your workspace neat and clean

Contacts of the internal instrument encoding

Encoding

- Continuous electronic readout of the magnification
- Automatic assignment of the calibration used for the image eliminates sources of error

Parfocal objective nosepiece

- Objective changes without refocusing
- User-defined combination of main objectives provides huge range of applications
- Encoding provides continuous configuration information to LAS

The objective nosepiece meets even the most stringent requirements for the magnification range without laborious refocusing

Modularity

- New Leica M-series instruments can be combined with many existing system components
- Choose from wide selection of objectives, stands, cameras, illuminators and other accessories
- A solution is available for practically every application

The LED5000 RL ring illuminator is one of the new, fully integrated illumination components, completely controlled on the instrument or using the Leica Application Suite

Completely integrated illuminator

- New illumination components seamlessly integrated into the complete system
- Complete control and reproducibility of settings
- All settings are elegantly easy to use
- Complete control of settings, manually or using LAS

Relaxed work

- Trinocular tube with 30° viewing angle
- Trinocular tube with 5–45° viewing angle
- Maximum viewing comfort for different microscope users

Revolutionary FusionOptics™ (Leica M205 C)

- Right channel with high resolution
- Left channel with great depth of field
- Information from both channels is combined in the brain
- Previously unheard-of resolution, brilliance and depth of field

20 notched diopter increments

- Prevents accidental adjustment of dioptric correction
- Replaceable eyecups for the highest standards of hygiene

Apochromatically corrected optics

- Optics corrected for chromatic aberrations and flatness
- No unwanted color seams or distortion during observation, image capturing or image evaluation

Convenient operation under the microscope

- Largest working distances for all Leica main objectives
- Optimum access to work specimen
- Field number 23 enables large-surface overview over the specimen

Leica M125 with new motorfocus and LED illumination LED5000 RL

The viewing angle is variable from 5°– 45° to ensure optimally relaxed head posture

The notched increments of the eyepieces prevent accidental adjustment of the dioptric correction

The new, planapochromatic objectives prevent color seams, and field number 23 enables a large overview of the specimen

The working distance of 61.5mm leaves plenty of free room under the objective

Leica Design by Christophe Apothéloz

Man as the reference

The correct observation height

When the observation height of the microscope is matched with the physical height of the user, a few millimeters are crucial. If the user has to change his head position to use the instrument, his entire body will assume an unnatural posture, which may cause headaches, a stiff neck, and reduced work performance. A tube with variable viewing height such as the new ergotrinocular tube solves this problem with a few twists of the wrist.

The correct posture

Routine work while seated at the microscope can cause tension in the neck and back muscles, in the worst case even postural defects of the spine. All the control elements of Leica stereomicroscopes are arranged for the greatest possible comfort of the user. In this way, they actively combat muscle tension and fatigue.

The correct focusing position

The motor focus can be operated easily with the SmartTouch™ or from the computer with the Leica Application Suite (LAS). The arm is relaxed and resting on the work surface. SmartTouch™, mouse and keyboard can be set up to meet your individual needs. This posture is far less tiring for the user than the conventional posture, even when he changes positions frequently.

www.leica-microsystems.com/products/M125
www.leica-microsystems.com/products/M165C
www.leica-microsystems.com/products/M205C

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