From Eye to Insight

Leica
MICROSYSTEMS

AUTOMATED CRITICAL POINT DRYER

Leica EM CPD300

LEICA EM CPD300 – YOUR BENEFITS

Trusted reliability

- Fully reproducible processes by automation
- Highly reproducible sample preparation

Time saving

- Reduced process times by new Leica filler/ sample holder concept
- Minimal user interaction time by automation and intuitive software
- Efficient synergy with Leica pre-treatment instrument EM TP Tissue Processor

Ease of use

- Ease of use by intuitive software and integrated touch screen
- Store and recall drying programs
- Expected process time calculated and displayed according to selected process parameters
- Timer function
- Flexibility in sample size
- Large variety of sample holders

Leica EM CPD300 Critical Point Dryer

The new Leica EM CPD300 dries specimens such as pollen, tissue, plants, insects, etc. as well as industrial samples, for example Micro Electro Mechanical Systems (MEMS), in a fully automated and controlled process. This automated, controlled technique leads to perfect, reproducible results and ensures the same sample quality from every run.

Cost saving

- Minimized CO_2 consumption by new Leica filler/sample holder concept
- Minimal user interaction time

Enhanced safety for user

- Increased safety by software controlled temperature and pressure cut off function
- Integrated waste separator avoids direct contact

CRITICAL POINT DRYING

The procedure of critical point drying is an efficient method for drying delicate samples for SEM applications. It preserves the surface structure of a specimen which could otherwise be damaged due to surface tension when changing from the liquid to gaseous state. In the past, critical point drying was a time consuming process with low sample reproducibility due to the many manual operations required.

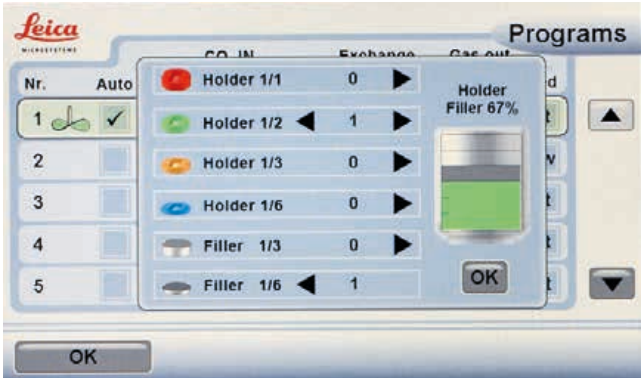
Before drying, many biological samples are commonly prepared through fixation and dehydration and coated after drying with metal such as gold, platinum or palladium to make their surfaces electrically conductive for SEM analysis.

Leica Design by W. Hölbl

The New Leica Filler Concept – Reduced CO_2 Consumption and Process Time

Sample container with sample holder and filler

The Leica Filler Concept was developed to meet customer demands to reduce CO_2 consumption and process time. With the ability to adjust the chamber volume to the sample size, the exchange volume is reduced, thus minimizing process time and CO_2 consumption.



Filler/holder setting can be programmed to reduce CO_2 consumption and process time.

SAMPLE CONTAINER WITH QUICK RELEASE PIN:
For transferring specimens immersed in exchange fluid to the pressure chamber of the critical point dryer.

HOLDER FOR GRIDS: Slotted specimen holder for 32 grids. Ideal for drying specimens applied to film-coated grids such as bacteria, viruses, microorganisms, etc.

FILTER DISCS AND POROUS POTS HOLDER: Specimen holder with four numbered chambers for filter discs, porous pots etc. Ideal for small specimens such as bacteria, viruses, microorganisms, etc. Can also be used without filter discs or porous pots for medium sized samples.

WAFER HOLDER: Wafer holder for four 2" wafers.

FILLERS: Filler sizes with a volume of 1/3 and 1/6 of the chamber are available and can be combined with different sample holders and fillers. With the fillers, the chamber volume can be adjusted to the sample size. The exchange volume is reduced which leads to minimized process time and CO_2 consumption.

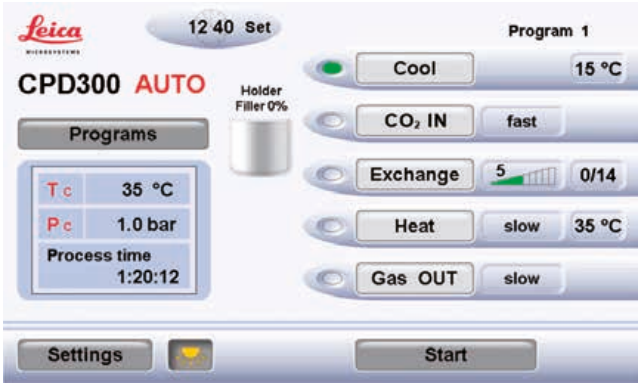
LEICA EM TP STEM HOLDER: The EM TP sample basket stem fits directly to the EM CPD300 TP stem holder without unloading the samples from the TP baskets. Can also be used as a universal sample holder for small specimens.

COVERSLIP HOLDERS (can also be used without coverslips for larger samples): Holder for 22 × 22 mm square coverslips.

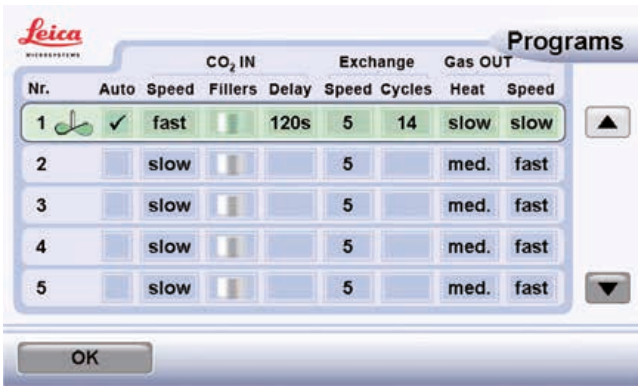
COVERSLIP HOLDERS (can also be used without coverslips for larger samples): Holder for 18 mm diameter coverslips.

COVERSLIP HOLDERS (can also be used without coverslips for larger samples): Holder for 12 mm diameter coverslips.

Intuitive Software and User Interface with Integrated Touch Screen

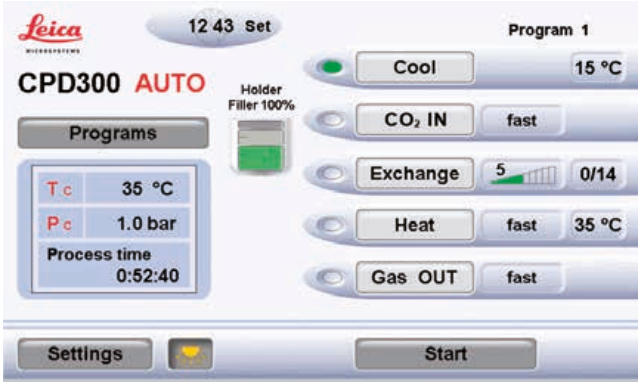


Main display before programming: Left side: Temperature, pressure and process time display, including timer function and holder-filler settings.
Right side: Indicates current process status.



Program display for storing and retrieving programs. Parameter settings for CO_2 IN, fillers, exchange steps and gas OUT settings.

Pop up-filler display: Filler and sample holder settings affect process time. Automated adjustment of the CO_2 IN time, exchange time and gas OUT time to filler-holder status.



Main display: After programming parameters, activated program and process time is indicated (bottom left and top right). Program can be activated with start button.

The Automated Leica SEM Workflow

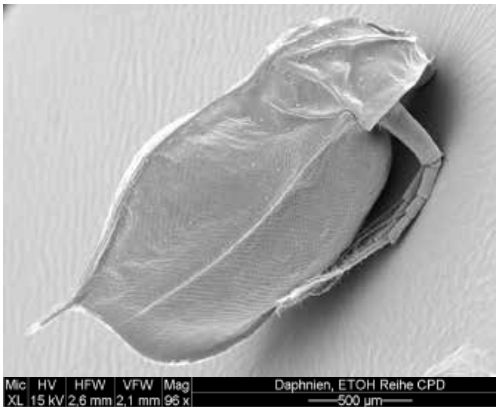
Leica Microsystems offers a complete preparation package for SEM workflow. The Leica EM TP is the ideal instrument for tissue processing. After dehydration of the samples with the EM TP, the TP sample basket stem fits directly to the CPD300 TP stem holder without unloading the samples from the TP baskets. Only one user interaction is necessary to facilitate the workflow for dehydration and critical point drying.

Leica Microsystems provides a full range of high quality coating systems as a follow-on procedure to critical point drying.

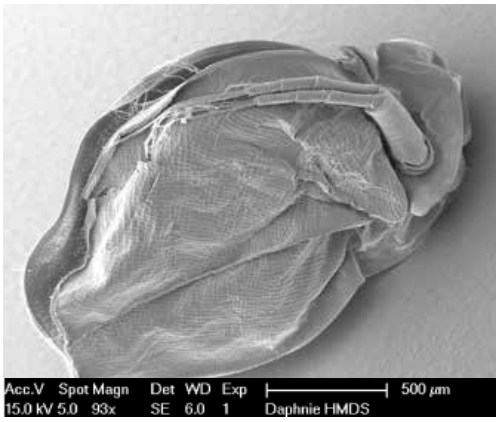
Comparison of Drying Methods

Water flea *(Daphnia sp.)*

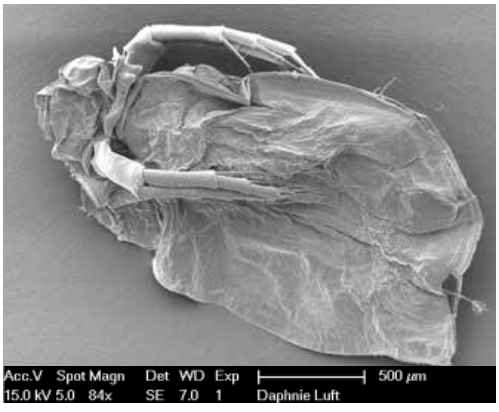
Drying method: Critical Point Drying with Leica CPD300



Drying method: Chemical



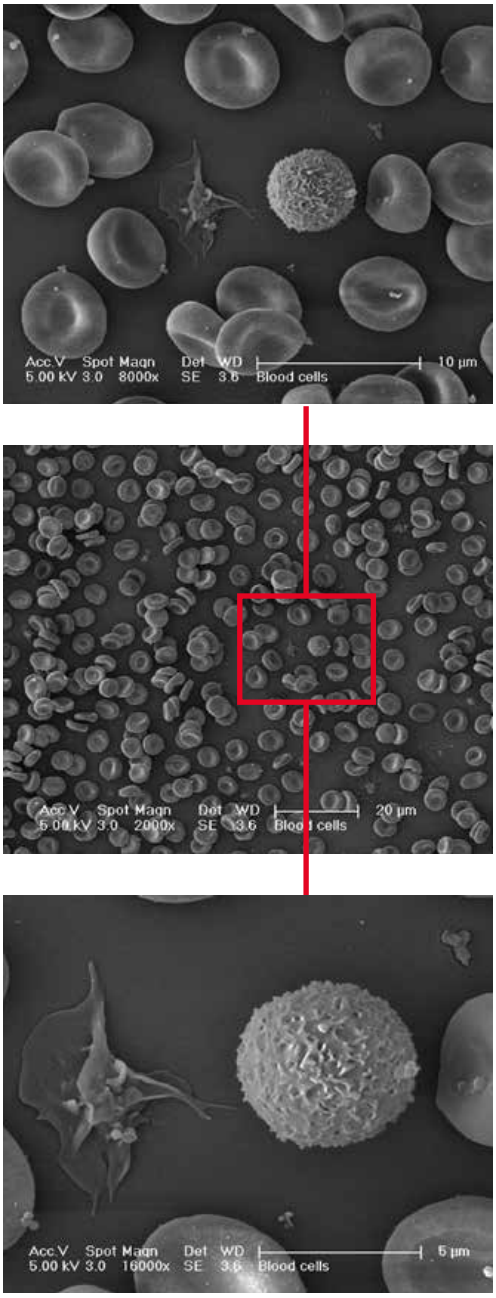
Drying method: Air



Courtesy of D. Gruber, University of Vienna, Austria

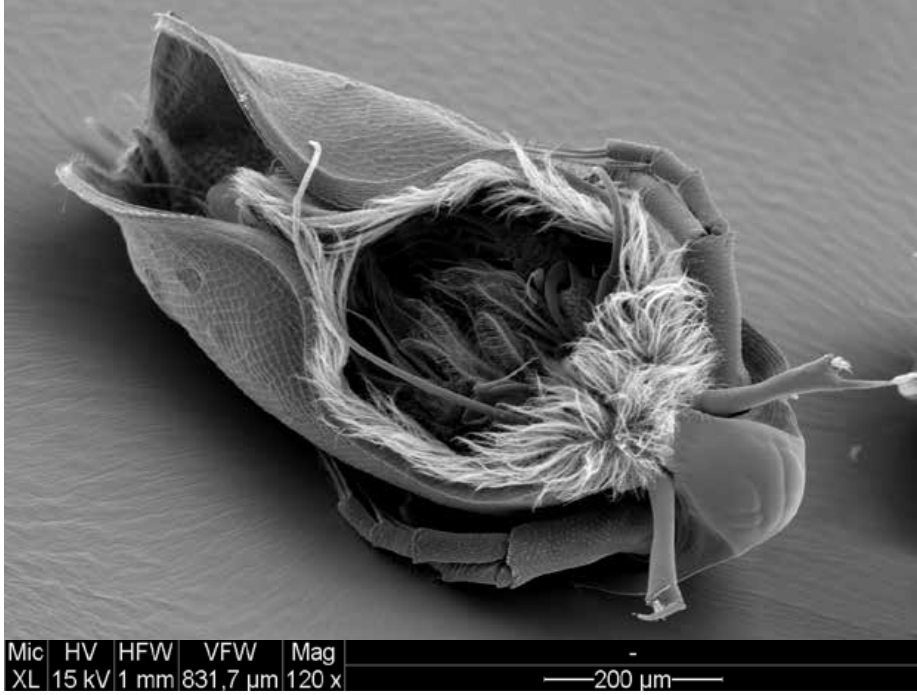
Applications

Blood Cells (Erythrocytes and Lymphocytes)

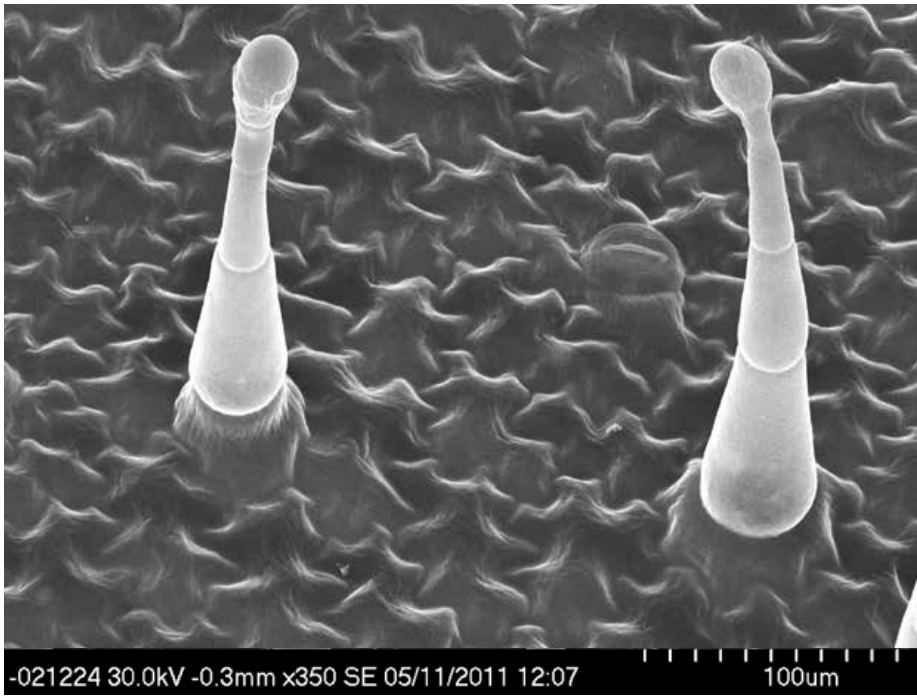


Courtesy of W. Müller, University of Utrecht, Netherlands

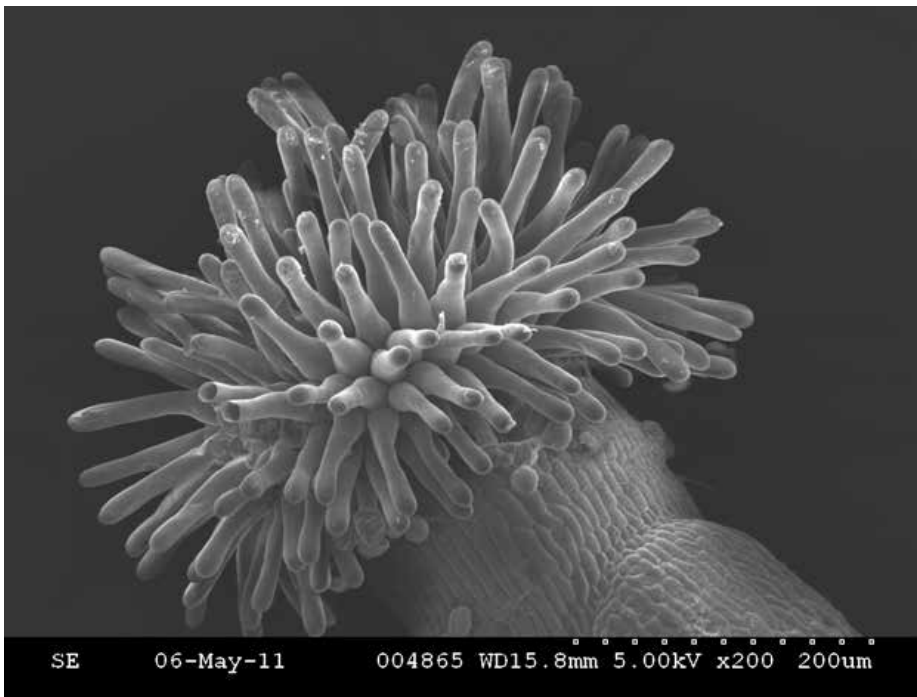
Water flea *(Daphnia sp.)*
(Courtesy of Mag. Daniela Gruber, University of Vienna, Austria)

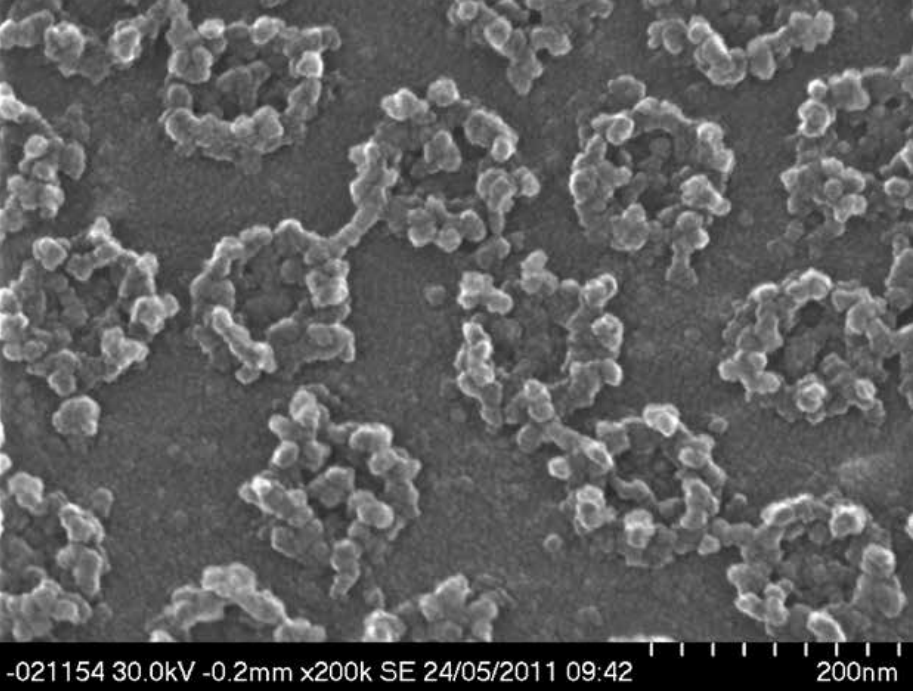


Tobacco leaf *(Nicotiana tabacum),* trichomes and stomata (Courtesy of Dr. Martin Goldberg and Christine Richardson, University of Durham, U.K.)

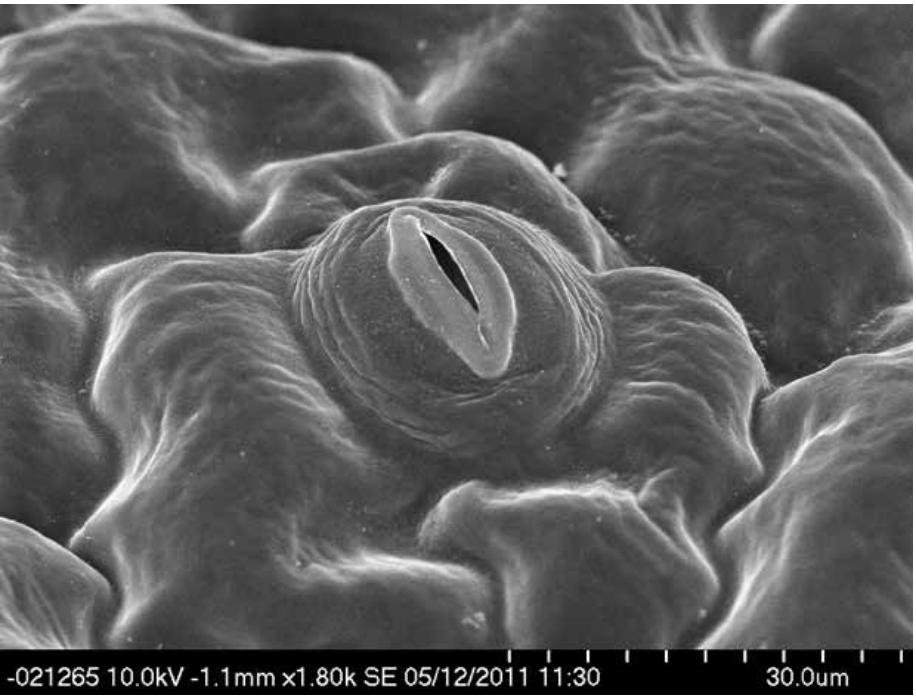


Wall Cress *(Arabidopsis thaliana),* stigma
(Courtesy of Dr. Kim Rensing, Applications Specialist Leica Microsystems, University of British Columbia, Canada)

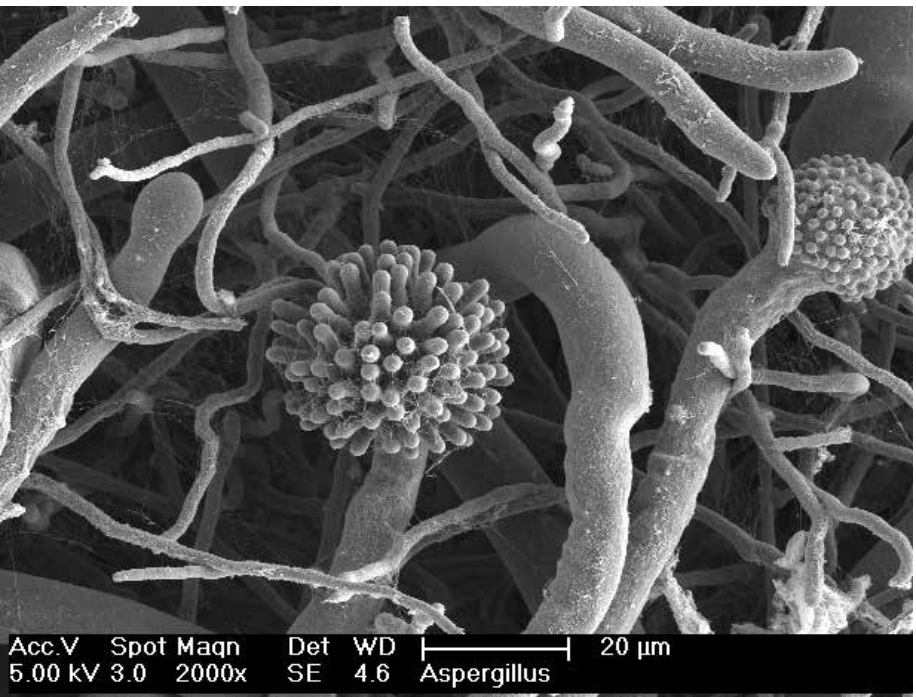




Clawed frog *(Xenopus laevis),* nuclear pores
(Courtesy of Dr. Martin Goldberg and Christine Richardson, University of Durham, U.K.)



Tobacco leaf *(Nicotiana tabacum),* stoma
(Courtesy of Dr. Martin Goldberg and Christine Richardson, University of Durham, U.K.)



Black mold *(Aspergillus niger),* conidiospores
(Courtesy of Dr. Wally Müller, University of Utrecht, The Netherlands)

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Leica Mikrosysteme GmbH · Vienna · Austria
T +43 1 486 8050-0 · F +43 1 486 8050-30

www.leica-microsystems.com