

From Eye to Insight

Leica
MICROSYSTEMS

THINK MULTI-PURPOSE!

CCD Camera Leica DFC7000 T
for Fluorescence and Brightfield Applications



Think Multi-Purpose!

The Leica DFC7000 T is a perfect work-horse: It's doing the work of two cameras – and exceptionally well, too! Based on the newest generation of Sony EXview HAD II sensor technology for fast acquisition, users can obtain fluorescence and brightfield images with one camera. Its specialty: simultaneous multi-color fluorescence imaging.

ONE CAMERA - TWO ACQUISITION MODALITIES

The Leica DFC7000 T spares users the need to change cameras during their experiments, since it is designed for brightfield and fluorescence applications alike.

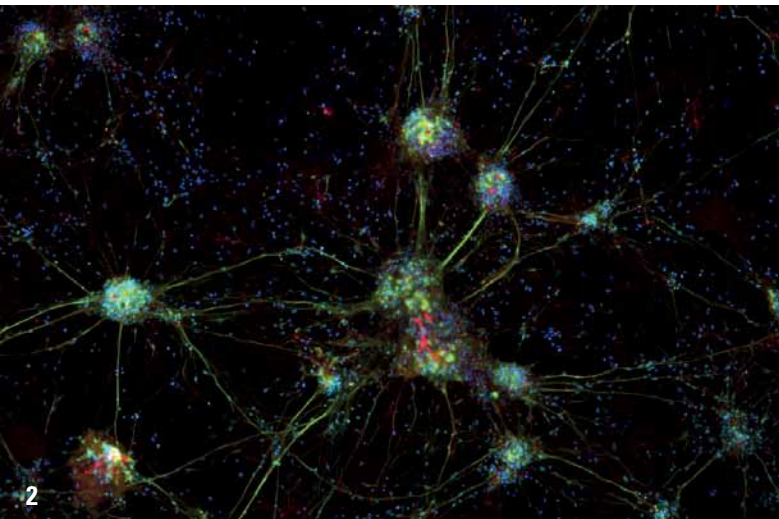
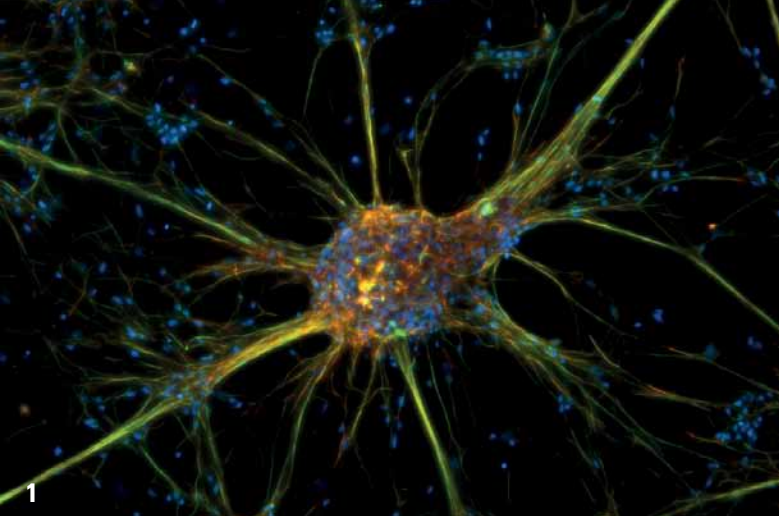
It can be easily switched from fluorescence imaging to brightfield documentation with outstanding color fidelity. The camera's exceptionally sensitive sensor combined with an innovative method of faithful color interpolation provides you versatility. Simply adjust your camera for your application demands in an instant and enjoy this newfound flexibility.

LARGE FIELD OF VIEW OBSERVATION

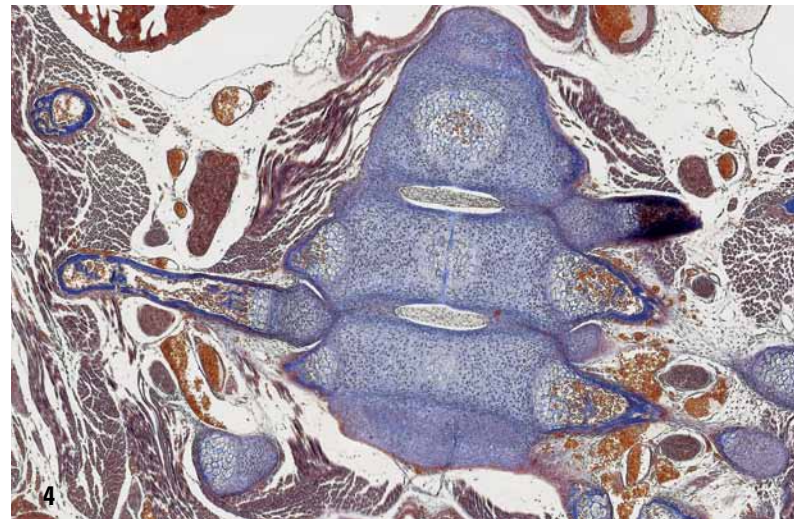
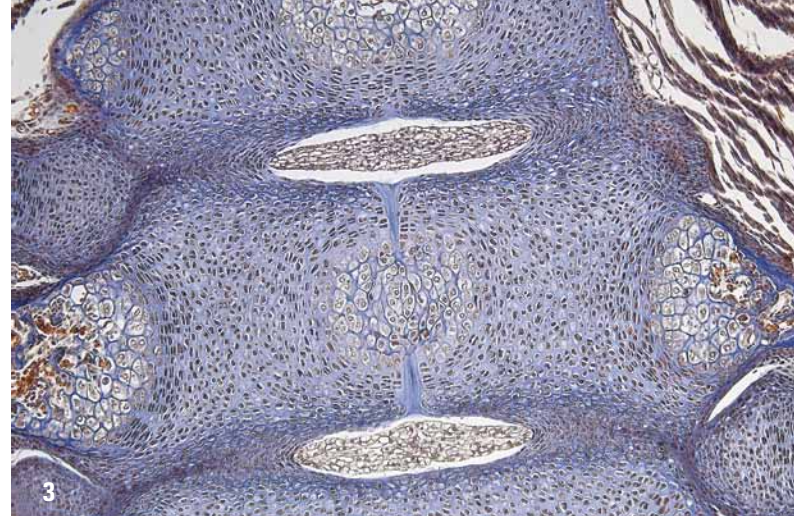
Two factors enable users to observe extremely large fields of view: First, the camera sensor which features 2.8 Megapixels with a pixel pinch of 4.54 μm . Secondly, Leica Microsystems' latest generation objectives with low magnification and high-numerical aperture objectives. It is the combination of the two that enlarges the field of view to speed up applications like tile scans. Based on new pixel architecture, this high resolution camera also maintains a wide dynamic range. We call that a paradigm shift!

HIGH SPEED OF ACQUISITION

Up to 40 live frames per second at full resolution – in high speed mode, enables you to position and focus samples effortlessly without any time delays. They can capture real-time, high-speed time-lapse recordings easily to collect precise kinetic data labeled with accurate time stamps. And if you need to be really fast, you can achieve up to 120 frames per second in 5 x 5 binning mode. What else could you want?



Cultured cortical neuronal cells (mouse). Simultaneous acquisition of 3 fluorochromes. Blue: DAP I, nuclei; Green: anti-Tubulin-Cy2; Red: Anti-Nestin-Cy3. (1) 40 x magnification, (2): 10 x magnification



Stained section of a mouse embryo. Brightfield image with 40 x objective (3) and as tile scan (4) of the backbone. Sample property of IGBMC, France.

MASTERING LOW-LIGHT FLUORESCENCE APPLICATIONS

Fluorescence documentation takes advantage of crisp fluorescent signals against a dark background. The Leica DFC7000 T performs multi-color fluorescence imaging even at low light conditions: Peltier cooling of the sensor, correlated pixel double-sampling, and the optional Black Balance function to reduce unwanted noise. They work together to create favorable environments that so far have not been achievable in this class of CCD cameras.

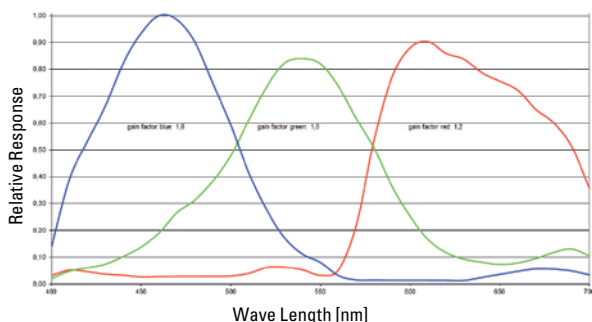
TRAIL-BLAZING BRIGHTFIELD DOCUMENTATION

The challenge of stained specimens is to display the colors as close to reality as possible. The Leica DFC7000 T blazes new trails with its color interpolation technology as it is based on an innovative 5 x 5 demosaicing algorithm. This makes the camera exceptionally well suited to discern even subtle color differences and enables users to do so as well.

EFFICIENT SYSTEM SOLUTIONS

Integration of systems provides users confidence that all components will work together smoothly in their experiments. The Leica DFC7000 T accomplishes a perfect integration: It works seamlessly with Leica Microsystems' software platforms to support a broad range of applications: with Leica Application Suite (LAS) for basic image acquisition and material analysis, and with LAS X, the highly modular, powerful software platform, for acquisition and analysis.

Quantum efficiency – relative response (curves are typical, not guaranteed)



Leica DFC7000 T Technical Data

Camera type	Digital color, high-sensitivity, cooled camera for fluorescence and brightfield microscopy
Housing	Aluminum, Size (L x W x H) 120 mm x 93 mm x 150 mm, Weight 1900 g
Sensor	Sony ICX674AQG CCD, EXview HAD II technology, quad-tap;
Shutter	Interline transfer progressive scan, global shutter
Pixel	1920 x 1440 (~ 2.8 MP); 4.54 µm x 4.54 µm pixel size
Full well capacity	> 15.000 electrons (e-) typical
Color filter	RGB Bayer mask
Exposure time	4 µsec - 200 sec*
Bit depth	8 bit / 12 bit with A/D converter of 16 bit
Binning modes	2x2 (mono/ color); 4x4 (mono/ color); 3x3 (mono/color; speed optimized); 5x5 (mono/color; speed optimized); color sensitive binning: R,G, or B pixel only
Partial scan	Freely definable ROI (region of interest), combination with binning possible
Dark noise	<0.05 e-/px/sec
Read out noise	typical 6 e-/ 10 MHz
Dynamic range	~ 68 dB
Pixel clocking rate	10 MHz/ 40 MHz
Analog gain	continuous 1x – 10x
Advanced features*	Color calibration, image averaging, sharpening, black balance, on-head image buffer, quad-tap read out and mono-tap read out, external trigger capability

Image formats	Pixel	fps* at 40 MHz/ 8 bit
Full frame	1920 x 1440	Color/Mono: 40
Turbo mode	1280 x 1024 (1.3 MP)	Color/Mono: 50
2x2 binning	960 x 720	Color/Mono: 35
3x3 binning (speed optimized)	640 x 480	Color/Mono: 91
4x4 binning	480 x 360	Color/Mono: 40
5x5 binning (speed optimized)	384 x 288	Color/Mono: 123

Supported operating systems	Windows 7 and Windows 8 (32-/64-bit)*
Software	Leica Application Suite (LAS X, LAS)
c-mount	0.7x for inverted and upright compound microscopes; 0.63x for stereo microscopes
Interfaces	USB 3.0 single cable and optional trigger cable
Power supply	5 V via external DC power supply
Power consumption	~14 W (with Peltier cooling)
Operating temp. range	+5°C .. +50°C
Storage temperature	-20°C .. +70°C
Air humidity	max 80%, non-condensing

* depends on software

KEY FEATURES FOR YOUR SUCCESSFUL EXPERIMENTS:

Brightfield applications:

- > Excellent color fidelity to discern subtle color differences
- > Reproducible color settings at any time
- > High-speed live preview for smooth focusing

Fluorescence applications:

- > Excellent signal-to-noise ratio – crisp and clear fluorescence signal against dark background
- > High sensitivity reduces sample bleaching and phototoxicity
- > Fast time-lapse imaging with accurate time stamps
- > Leading-edge trigger capability for efficient interplay of all microscope components

Please Contact a Local Specialist for Sales, Support or to Request a Quote!

www.leica-microsystems.com