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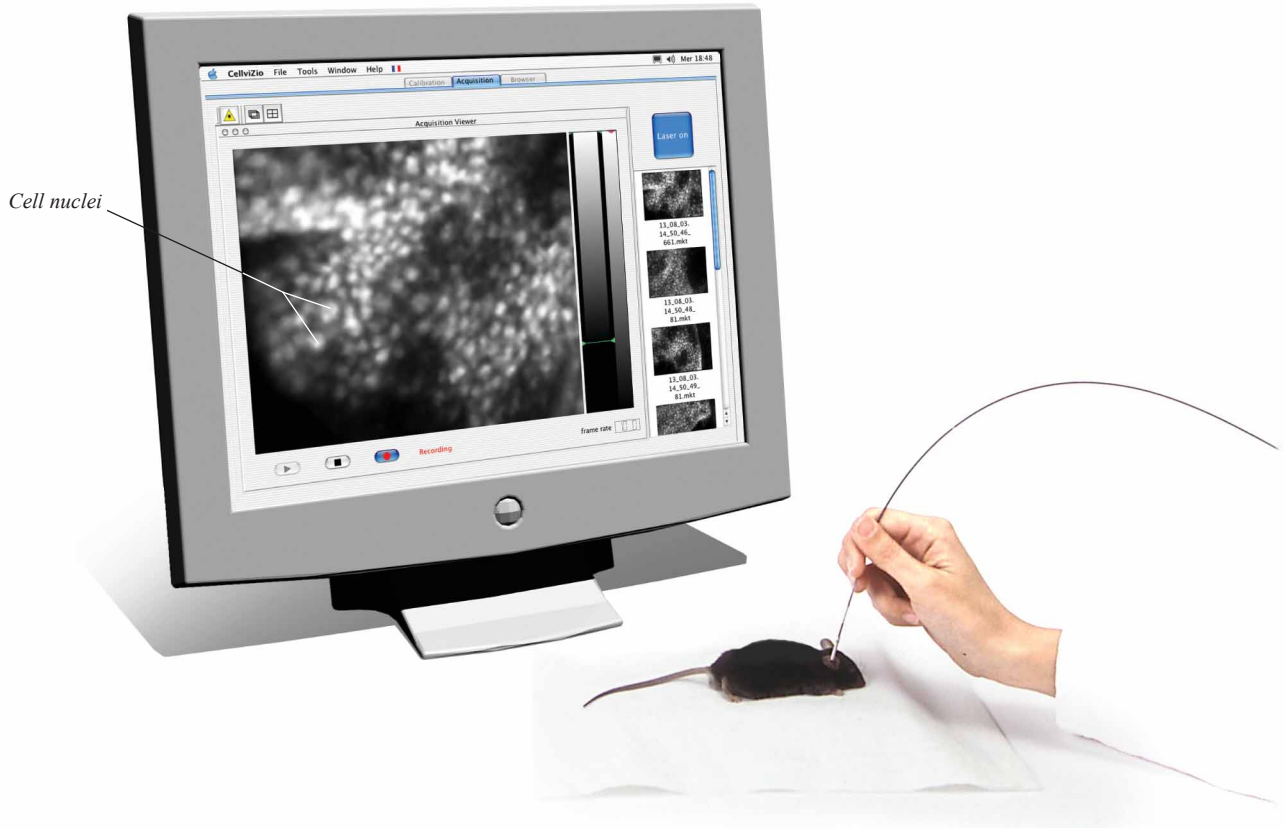
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Cell-viZio

Explore the living like never before



in vivo and *in situ* microscopy

for small animal imaging

- Unprecedented accessibility with a flexible optical mini-probe
- Functional imaging with confocal fluorescence technology
- Dynamic observations with real time acquisition and processing
- Unrivalled 2.5 micron lateral resolution

MAUNA KEA technologies

Cell-viZio

Watching cells in their native environment

Mauna Kea Technologies, leader in the field of Fibered Confocal Microscopy (FCM) systems for Life Sciences and Medicine, has developed a novel fibered confocal imaging device specifically designed for the observation of biological tissues *in vivo* and in real time at the cellular level : the **Cell-viZio.**

The unique micron-scale resolution of the Cell-viZio is the result of technical breakthroughs in the fields of ultra fast optoelectronics, custom micro- and fiber-optics, dedicated image processing and analysis software leading to the respective development of 3 indissociable elements :

- **FibroScan** *laser based optoelectronics unit*
- **ProFlex** *range of optical fiber mini-probes*
- **ImageCell** *software*



in situ imaging

The ProFlex optical mini-probes provide microscopic capabilities at the tip of a flexible image guide

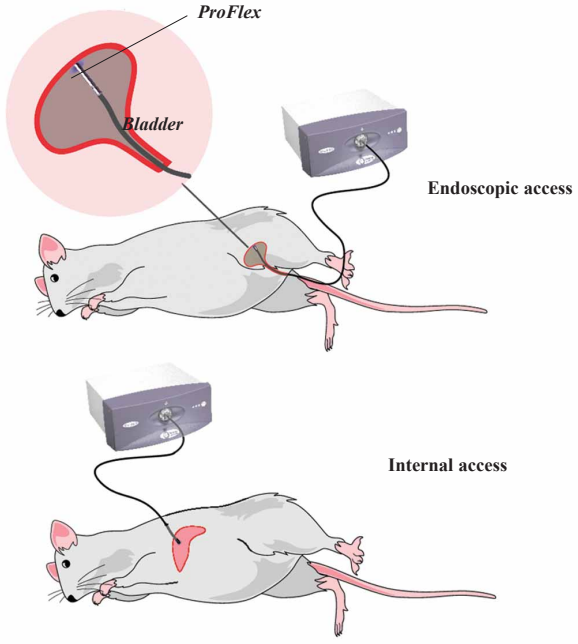
A new way to conceive *in vivo* experimentations on small animals

External, internal (through a buttonhole) or endoscopic access to tissues and organs are equally simple with the Cell-viZio and the ProFlex mini-probes. With its unique conception, the Cell-viZio opens a whole new range of possibilities with major benefits for the user :

- *The flexibility and size of the ProFlex mini-probes provide an unprecedented access to organs in situ*
- *Data obtained from the observation of living cells, sub-cellular or vascular features in their native environment are more physiologically relevant*
- *The minimal invasiveness of the ProFlex mini-probes improves the reliability of longitudinal studies while using less animals than existing methods*



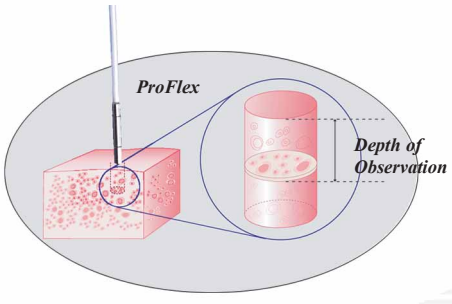
Tip of a 1.8 mm diameter ProFlex



The ProFlex mini-probes are made of several thousands to several tens of thousands of optical fibers as well as custom micro-optics. ProFlex are available as a range of flexible optical mini-probes with diameters from 0.35 mm to 1.8 mm and different optical parameters to meet the needs of most researchers working on small animals.

The Cell-viZio fluorescence confocal system presents optical slices of a biological tissue with the following characteristics :

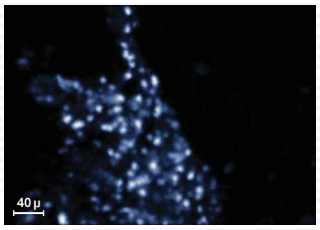
- *A depth of observation up to 80 microns (deeper in transparent tissues)*
- *A lateral resolution of 2.5 microns*
- *An axial resolution of 15 microns*



A new world of possibilities

“Endo-Microscopic” observation on small animals

Rat bladder accessed by urethral endoscopy

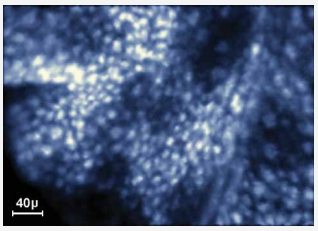


World Premiere

The Cell-viZio is the only device allowing microscopic imaging of small animal hollow organs via endoscopy. Many unprecedented investigations can now be performed at the cellular level on colon, stomach, mouth, bladder, etc.

< *Image of an orthotopic tumor treated by photodynamic therapy (PDT). Induced necrotic cells are stained for visualization*

Rat bladder accessed by urethral endoscopy

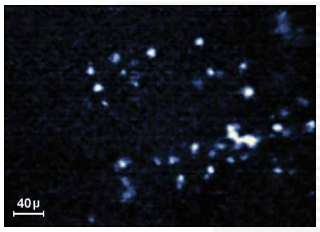


World Premiere

Image of cell nuclei stained for visualization >

Deep brain imaging

Mouse brain

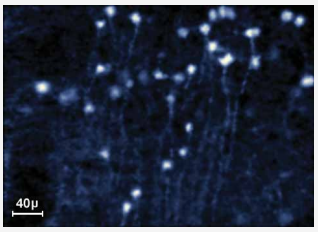


World Premiere

The Cell-viZio's unique *in situ* imaging capabilities give access to deep cerebral structures in living animals. The probe is inserted to any location using a stereotaxic set-up.

< *Fluorescent neurons are imaged several millimeters deep inside the brain*

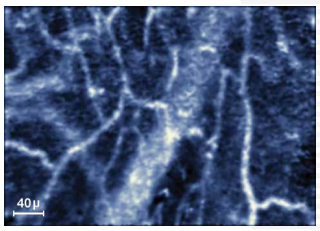
Mouse thick brain slice



Both cellular bodies and dendrites are visible on these eGFP pyramidal neurons >

Unique access to microcirculation

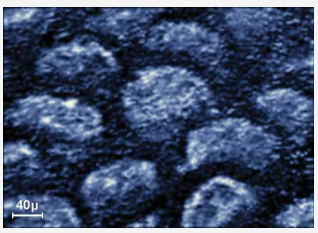
Mouse mesentery



The Cell-viZio is easy-to-use and provides a minimally invasive access to new sites on the animal. It is the ideal instrument for any microcirculation researcher contemplating intravital microscopy or those already deeply involved in this technique who feel the need for new experimental possibilities.

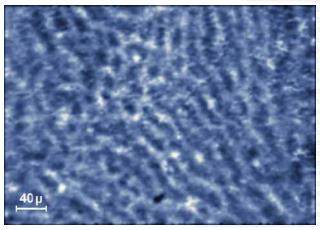
< *The ProFlex mini-probe is placed against the mesentery inside the peritoneal cavity*

Mouse intestinal microvilli



The ProFlex mini-probe is inserted in the lumen of the intestine through a small incision >

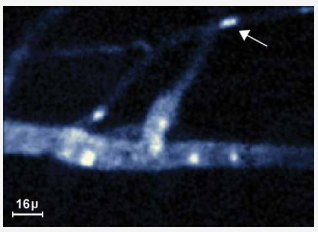
Mouse liver



Any site may be investigated for vascular architecture, hemodynamics or cellular components while preserving the physiological state of the organ of interest.

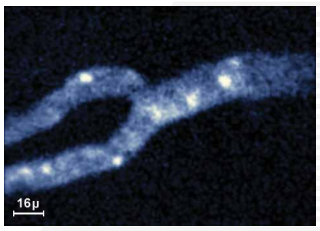
< *The organ is kept intact in its native physiological environment*

Mouse red blood cells



Deforming erythrocytes are viewed into the smallest capillaries >

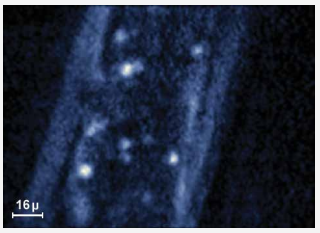
Mouse red blood cells



Dynamic imaging enhances the visualization and quantification of many microcirculatory characteristics such as vascular permeability, tissue perfusion, leukocyte rolling or adhesion, vasoactivity, etc.

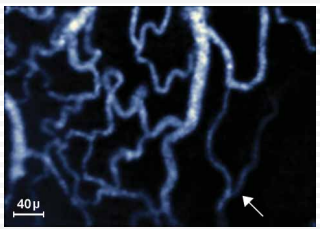
< *Cellular components of blood are stained for dynamic visualization* >

Mouse white blood cells



Ophthalmology

Rabbit retina

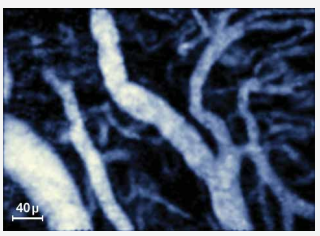


World Premiere

With the Cell-viZio, small retinal microvessels never before seen *in vivo* are easily observed. The Cell-viZio opens a new range of microscopic studies of retinal and optic nerve microvascularization diseases and treatments, conjunctival or corneal pathologies.

< *The ProFlex mini-probe is applied to the retina through a small incision in the sclera* >

Rabbit retina, optic nerve area



Microscopic imaging *in vivo* at your fingertips



The Cell-viZio is the first ever Fibered Confocal Fluorescence Microscopy product and is dedicated to small animal imaging. It allies the power of real time imaging with *in vivo* and *in situ* capabilities.

The Cell-viZio is easy to operate and its functionalities are readily accessible with the ImageCell software interface.

- *No organ preparation needed*
- *No specific technical expertise required*
- *Highly stable real time imaging*
- *Easy set-up*
- *Small footprint*
- *Plug & play ProFlex mini-probes*

Cell-viZio : a complete solution for small animal imaging



FibroScan 488 is a laser scanning opto-electronics unit specifically developed to meet the needs of *in vivo* confocal imaging through fiber optics. The excitation wavelength at 488 nm makes it compatible with GFP transgenic animals and numerous exogenous fluorescent agents.



ProFlex optical mini-probes are to the Cell-viZio what an objective is to a microscope. Made of several thousands of flexible optical fibers and ultra-high precision micro-optics, their external diameter can be as small as 350 microns.





ImageCell is a software operating under MacOS X* allowing the researcher to :

- *Control the image acquisition and display at up to 12 frames/sec*
- *Perform on-the-fly image processing*
- *Analyze and quantify image features*
- *Export all data in standard formats*

** The cell-viZio platform is provided with an Apple computer configuration including display, computer, keyboard, mouse and with a foot pedal*

FibroScan 488 specifications

Excitation Wavelength	488 nm
Collection bandwidth	500 - 650 nm
Imaging rate	12 images/sec.
Signal encoding	13 bits
Linearity	Full range linearity
Images/Movies export format	.png, .bmp, .jpeg / .mpeg, .avi
Power requirements	150 W (110 - 240 V)
Dimensions	480 x 180 x 500 mm
Weight	20 kg

ProFlex specifications

References	Probe diameter (mm)	Working distance (µm)	Axial resolution (µm)	Lateral resolution (µm)	Field of view (µm)	Sensitivity
S-0350-5.0 (***)	0.35	0	15	5	300x300	++
S-0650-5.0	0.65	0	15	5	400x280	++
S-1500-5.0 (*)	1.5	0	15	5	400x280	++
HD-1000-2.5 (***)	1	20/40/60/80 (**)	20	2.5	120x85	+
HD-1800-2.5	1.8	20/40/60/80 (**)	20	2.5	160x120	+

Please contact us to discuss the probe most relevant to your application.

(*) Adaptation of the S-0650-5.0 with a metal ferrule for more suitable endoscopic use

(**) Working distance to be chosen by the client according to his/her needs

(***) Soon to be available

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