

# Cellvizio<sup>®</sup>

## IN VIVO CELLULAR IMAGING SYSTEM

- 1.8  $\mu\text{m}$  resolution inside the living animal
- Ultra-thin fibered microprobe
- Real time video acquisition and visualization
- Complementary to other imaging technologies



Mauna Kea Technologies





## Cellvizio®

- Is a fluorescence optical imaging system that provides images by simple and direct contact
- Acquires and records real time dynamic movies at 12 frames per second
- Complements other imaging techniques: MRI, PET, SPECT, ultrasound, whole body...
- Enables *in vivo* and *in situ* sub-cellular observations



### A Complete Imaging Solution

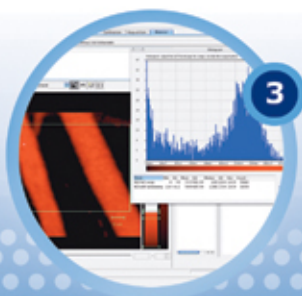
**ProFlex™.** Fibered imaging microprobes composed of tens of thousands of fiber optics, micro-optics and a proprietary micro-precision connector.

- Varying diameters (from 4.2 mm to 300 μm) for versatile access
- Multiple configurations with different optical performances to meet the needs of professionals in any domain
- Rapidly interchangeable for multiple ProFlex experimentations



**Laser Scanning Unit™.** Specially designed to meet the needs for real time imaging inside the living animal via our fiber bundles.

- Functions with all ProFlex microprobes
- Available in two configurations: either 488 nm or 660 nm excitation wavelength
- Compact and robust system easy to integrate into lab or animal facilities



**ImageCell™.** Mauna Kea Technologies' software package that controls image acquisition, real-time display and post-acquisition processing, all via an intuitive, user-friendly interface.

- On-the-fly image processing
- Analytical and quantification tools
- Numerous export formats: images, movies and data



# Cellvizio<sup>®</sup>

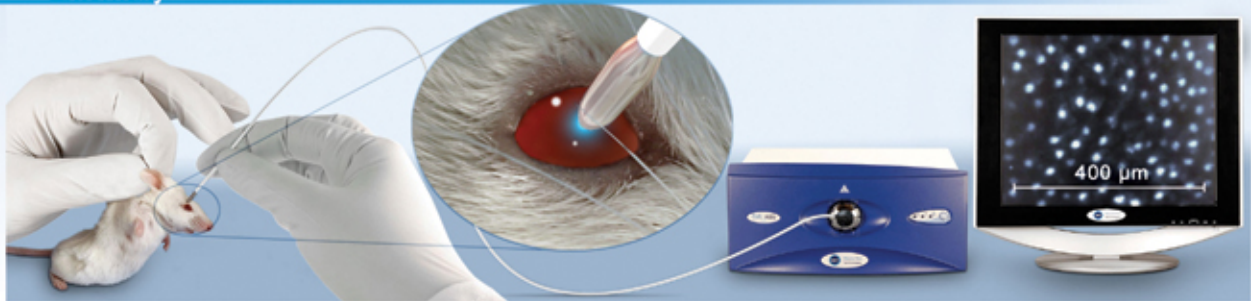
## Simply. Immediately. Intuitively.

- Access anywhere in the animal with the minimally invasive microprobes
- Acquire movies by simply placing the hand-held microprobe in contact with a fluorescent tissue
- Image live anesthetized animals for physiologically accurate data
- Take advantage of *in vivo* sub-cellular resolution to complement your current imaging capabilities (MRI, PET, SPECT, ultrasound, whole body systems...)

This ease of use is made possible by the rapid acquisition rate of the system.

## Image Virtually Anywhere in the Living Animal in Real Time

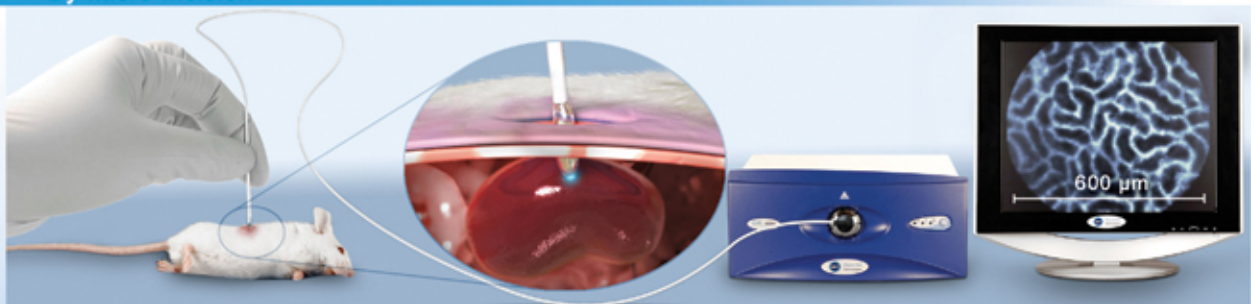
### ▼ Externally



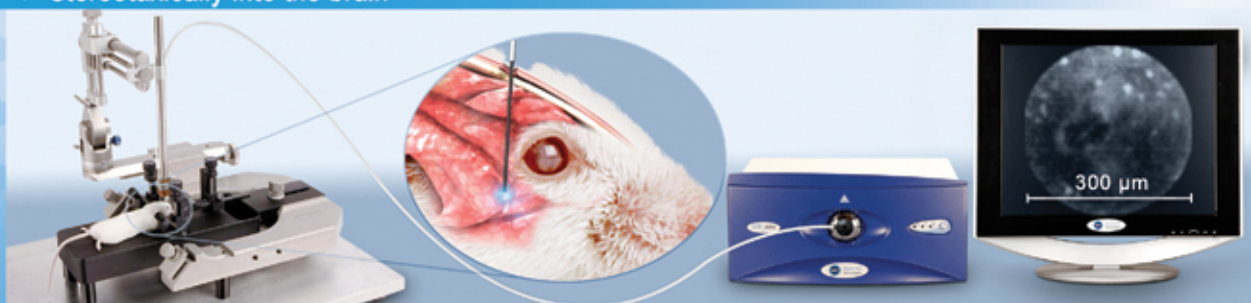
### ▼ Endoscopically



### ▼ By Micro-incision



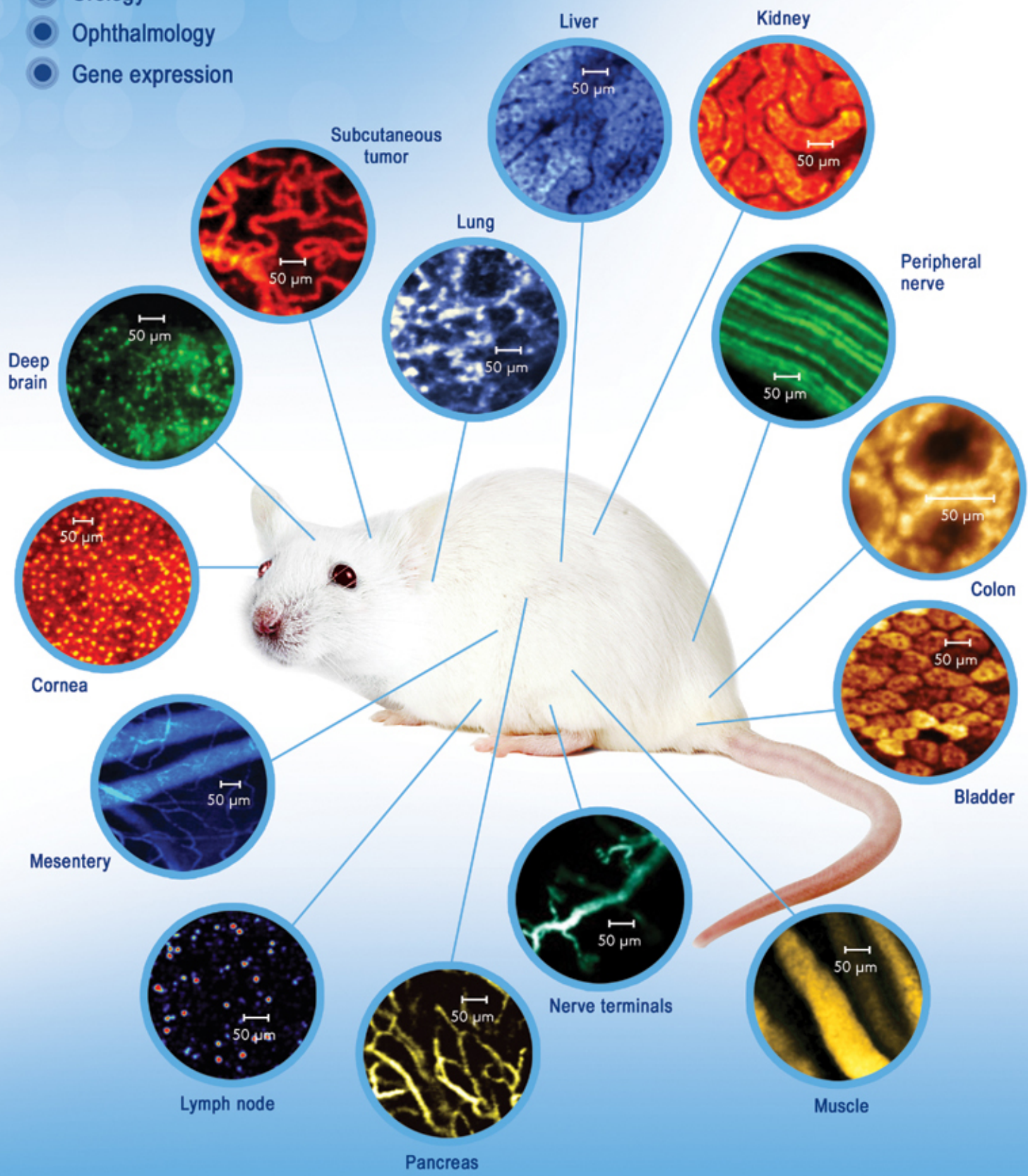
### ▼ Stereotactically into the brain





**Acquired on living animals**

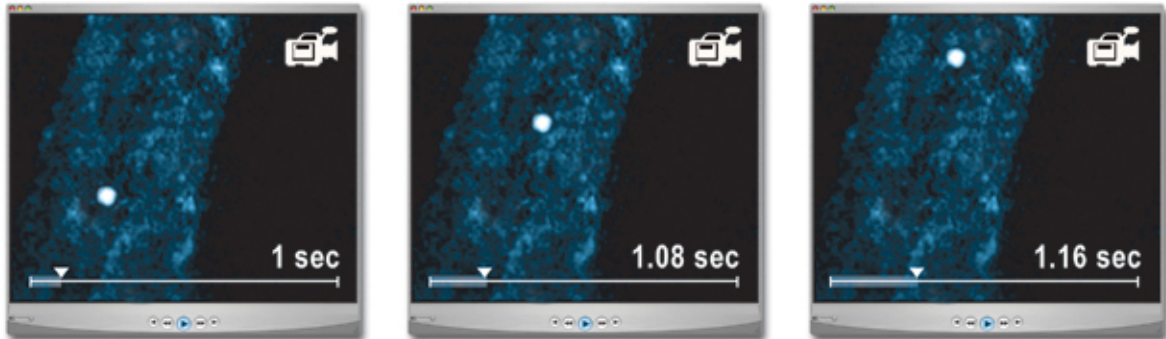
- Cancer research
- Central nervous system
- Peripheral nervous system
- Cardiovascular research
- Immunology
- Tissue engineering
- Urology
- Ophthalmology
- Gene expression





## Watch the Movie of Your Cells

Cellvizio®'s rapid acquisition rate of 12 frames per second enables smooth, fluid video of dynamic events such as blood cell circulation (below) and calcium signaling. Even more, this versatility enables users to scan larger regions, such as the entire length of nerves during regrowth and the colon for ACF detection.

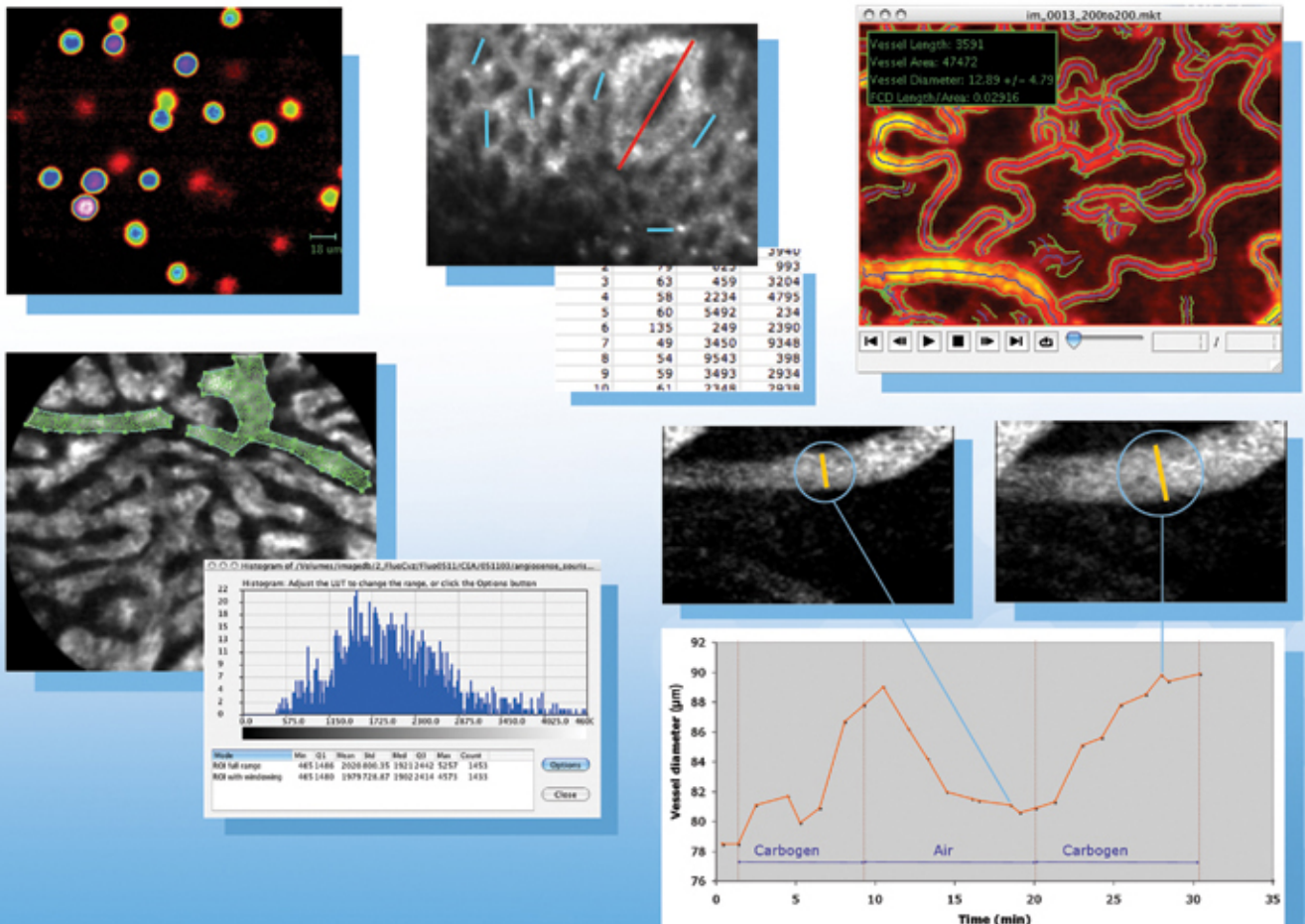


## Go Beyond Imaging with Quantification

- Vasodynamics
- Calcium imaging
- Apoptosis quantification
- Functional capillary density
- Nerve regrowth
- Cell migration
- Vessel permeability
- Aberrant crypt foci detection
- Platelet adhesion

ImageCell, the proprietary software component of Cellvizio®, enables simple and rapid quantification of acquired images and movies. ImageCell responds to these analysis needs by combining:

- Specifically developed ImageCell quantitative tools
- Statistical data export
- Image and movie exports to a host of programs



# Cellvizio®

Cellvizio® is delivered complete with an LSU-488 or LSU-660, a ProFlex™ S-1500, an Apple computer including a high resolution flat panel monitor, ImageCell™ software, a foot pedal, a ProFlex holder and complete user documentation. Cellvizio® is a rapidly evolving imaging platform. New additions to the ProFlex family of microprobes and to the ImageCell software package will regularly enhance Cellvizio®'s capabilities.

## ProFlex™ Specifications

	Part Number	ProFlex™ diameter (mm)	Working distance (µm)	Axial resolution (µm)	Lateral resolution (µm)	Max field of view (µm)	Sensitivity
S series	S-0300	0.3	0	15	3.5	300 x 300	++
	S-0650	0.65	0	15	3.5	600 x 500	++
	S-1500	1.5	0	15	3.5	600 x 500	++
HD series	HD-1800/30	1.8	30	20	2.5	240 x 200	+
	HD-1800/50	1.8	50	20	2.5	240 x 200	+
	HD-1800/80	1.8	80	20	2.5	240 x 200	+
	MiniO	4.2	30	5	1.8	240 x 200	++ <b>NEW</b>

## Laser Scanning Unit™ (LSU) Specifications

LSU Model	LSU-488	LSU-660 <b>NEW</b>
Excitation wavelength	488 nm	660 nm
Collection bandwidth	505-700 nm	670-900 nm
Examples of appropriate fluorophores	FITC, Syto13, Yoyo1, CellTracker Green, Rhodamine 123 or 6G, as well as GFP and YFP transgenic animals	Cy5.5, AngioSense, ProSense, Alexa Fluor 680, Alexa Fluor 647
Frame rate	12 frames/sec.	
Signal encoding	13 bits	
Image export format	.png, .bmp, .jpeg, .pbm, .pgm, .ppm, .xbm	
Movie export format	.mpeg, .mhd (raw format)	
Power requirements	150 W (110-240 V)	
Laser Class	Class 2M	
Dimensions	480 x 205 x 500 mm	
Weight	20 kg	

Images courtesy of K. Lin, National Health Research Institute, Hsin Zu County, Taiwan ROC; D. Cheng, Taichung Veterans General Hospital, Taiwan ROC; A.C. Duconseille & O. Clément, Descartes Image, Université Paris V, France; C. Laplace, Genethon, France; B. Mahé, La Pitié Salpêtrière, France; M.A. D'Hallewin, Centre Alexis Vautrin, France; B. Lambrecht, Erasmus MC, Netherlands; I. Charvet & P. Meda, Medical Research Center (CMU), Switzerland & L. Stoppini, Biocell Interface, Switzerland; Y.T. Lau, Chang Gung University, Taiwan ROC; IUPUI, Indianapolis, USA; R. Boisgard and B. Tavilian, CEA-SHFJ, France; L. Bourgeois, R. Lambert & P. Vincent, Université Pierre et Marie Curie, France.

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