*just as it is ...*

Fluorescence *In Vivo* Imaging System

# FOBI


## Fluorescence

## *In Vivo, Ex Vivo* and *In Vitro*

## Small animal and Plant

## Tumorization, Cell tracking, Drug tracking and Gene expression

FOBI is a device that can image and analyze fluorescent signals from tissues and organisms. Images of various fluorescent proteins and dyes are taken using 4 channels consisting of Blue, Green, Red, and NIR. Using an optimized light source, filter, and color camera for macro-imaging, FOBI can obtain intuitive, high quality images. This configuration clearly distinguishes between background and signal without further analysis and is also available through the live window.

The background caused by autofluorescence and reflected light is the biggest obstacle for fluorescence imaging. The NEOimage program analyzes fluorescence images easily by effectively removing these backgrounds. In addition, the uniform light intensity of the LED light makes it possible to measure certain quantity values. FOBI has a simple design, is easy to use, fast and reliable.

CGT
CELLGENTEK

# Features

## Real color data

FOBI uses a color camera and optimized filter for the fluorescence signal through the live window without any special analysis. This live window allows you to intuitively identify the position and intensity of the fluorescence and to get image data as it shown.

## Fast

FOBI has a fast frame rate capable of recording videos. Due to the fast video speed, many samples can be processed quickly and instantly observed and responded.


Fig. 1. FOBI

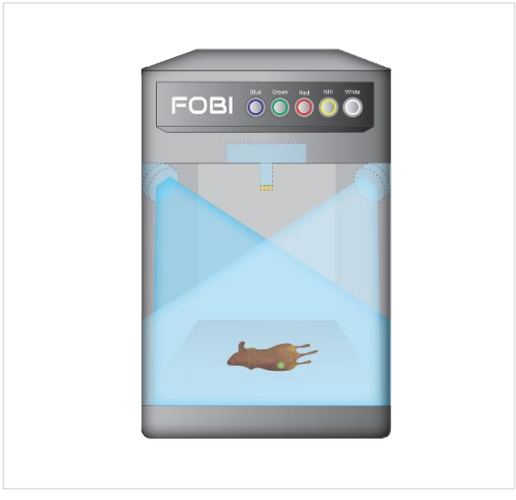



Fig. 2. Structure of FOBI

## Simple

FOBI utilizes a simple, optimized structure, making installation quick and easy. It is also easy to move, manage, and maintain.

## Compact size

The FOBI has a compact size (26 x 26 x 40 cm), so it is ideal for small spaces. Due to its convenient size and portability, it can be used for a wide variety of applications.

## Easy to use

Hardware and software are user-friendly. Filter mounting, exposure control, and image capture are all simple and easy to use.

## Multi function

It is possible to apply most fluorescence proteins and fluorescence materials from GFP to ICG using four channels of Blue, Green, Red and NIR. Since more than one fluorescent substance can be imaged, different functions can be observed in one sample. For example, tumor imaging and drug imaging can be performed in the same animal, so targeting and tumorization can be observed simultaneously. You can also merge bright images in order to localization the fluorescence within the animal.

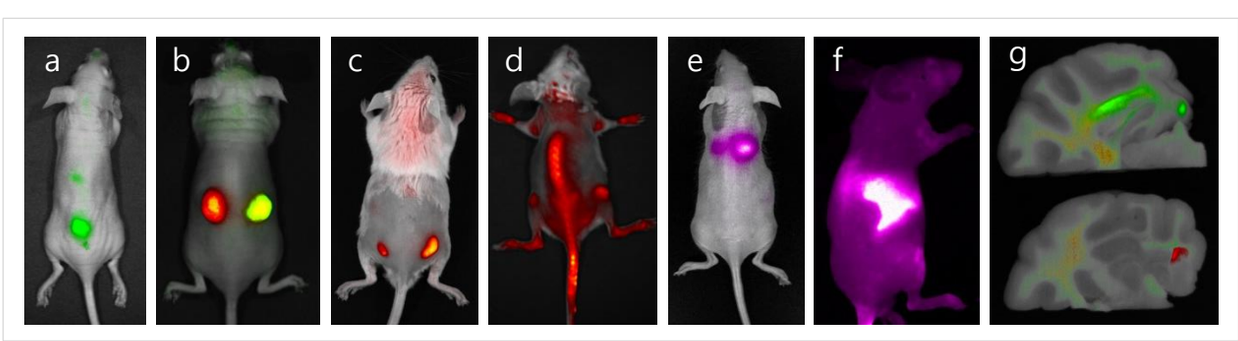



Fig. 3. Animal imaging by FOBI

a. Tumorization of GFP expressing stable cell line injected subcutaneous. b. FOBI can imaging variable fluorescence molecules from GFP to ICG. c. iRFP (near infrared fluorescence gene) tumor. d. DiD labeled immune cell injected via tail vein moved to inside the spine. e. ICG labeled drug targeted to the lung. f. Cy7 labeled drug moved to the liver. g. GFP expression and drug targeting in the sliced ape's brain.

# Applications

## Tumor imaging

GFP stable cell line can be used to confirm tumorization. The created GFP stable cell line can be imaged *In Vitro* using FOBI. GFP cells are injected into subcutaneous tissues and fluorescence images as cell proliferation. In this way, one can obtain images of metastasis to other tissues, in addition to quantifying and comparing tumor size.
Over time, the signal strength of the fluorescence changes, and the camera exposure time may vary accordingly. The NEOimage analysis program can quantify this change by taking into account different conditions such as exposure time and gain; the results of samples with differing images can also be compared and analyzed.

## Cell tracking

Stem cells or immune cells with enhanced functions for various purposes can be imaged within the animal so as to ascertain their location and viability. Stem cells and immune cells are difficult to label with fluorescent genes. So, cells can be stained with fluorescent reagents in a variety of ways.
Stem cells and immune cells stained with a fluorescent reagent can be put into an animal using various methods such as intravenous injection, intraperitoneal injection, and subcutaneous injection. These cells can be located using FOBI imaging. One can determine cell survival using quantitative analysis.

## Plant imaging

FOBI can image GFP labeled plant leaves. Plant leaves are difficult to obtain images of due to the strong autofluorescence of Chlorophyll. Chlorophyll's autofluorescence can be removed and analyzed with GFP using a specific filter.
The autofluorescence of chlorophyll itself can also be used as data. The degree of activity of chlorophyll can be confirmed by the intensity of the autofluorescence.
In addition, images can be obtained from plant seeds and callus. Fluorescence imaging is possible with plants throughout their entire life cycle.

## DDS (Drug Delivery System)

Drugs confirmed *In Vitro* can be injected into animals for experimental purposes. By taking images at certain intervals, you can check the movement and accumulation pattern of the drug in the living tissues of the animal.
The image of the drug confirmed *In Vivo* can be checked again *Ex Vivo*. Because the fluorescence is still expressed even after the animal is sacrificed, it is possible to quantify each tissue separately.
The resulting *Ex Vivo* data, together with the *In Vivo* data, can provide excellent evidence for an experiment.

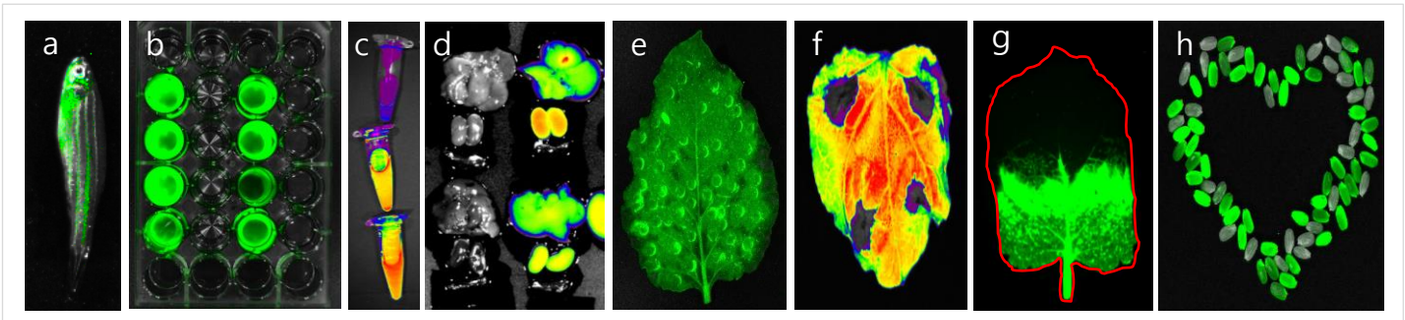


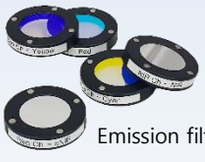

Fig. 4. Fluorescence imaging of various materials and methods

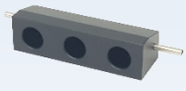
a. Fluorescence labeled chemicals in the Zebrafish. b. GFP cell in the 24well plate. c. Fluorescence labeling test. d. *Ex Vivo* imaging for drug delivery system. e. GFP expression leaf infected gene by virus vehicle. f. Auto-fluorescence from the chlorophyll. g. Gene expression on the leaf with marker gene. h. Gene transfected seed seperated by GFP imaging.

## Specifications

| | FOBI | FOBI S |
|---|---|---|
| Image Sensor | 1/2" color CCD sensor | 4/3" Color CMOS sensor |
| Resolution | 1392 x 1040 | 1400 x 1050 |
| Frame Rate | 15 fps | 30 fps |
| Digital Output | 24-bit | 24-bit |
| Interface Connector | USB 2.0 | USB 3.0 |
| Channel | Blue (GFP, FITC...), Green (RFP, Cy3...), Red (Cy5.5, DiD...), NIR (Cy7, ICG...) | |
| Weight | 9 kg | |
| Size (W x D x H) | 260 x 260 x 400 mm | |

### Accessories


Emission filters


Anesthesia mask


Anesthesia tube


Sample plate


Mouse trap

Anesthesia system (Option)

### Product Type

There are two types of FOBI. One is a standard type that takes a picture with the door closed and outside light blocked. The other is an open type with no doors and walls on the right and left. The open type FOBI can be used when the sample size is large, such as rabbits and apes, or when recording a video of a surgical scene.

Standard Type

Open Type

## Fluorescence Labeling Service

Cellgentek provides a service to label the fluorescence to chemicals and peptides.
It is optimized for *In Vivo* imaging and fits well with FOBI.

**For more information, please visit our website at www.bioimagingsystem.com**

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