

Newton 7.0 Bio

Bioluminescence &
Fluorescence for
Plant Imaging



DETECT & DECODE

WE KNOW WHAT THESE IMAGES MEAN TO YOU

The NEWTON 7.0 BIO is a smart worldwide used optical imaging system dedicated to bioluminescence and fluorescence detection for plants and other in vivo / in vitro biological samples. Thanks to its unrivaled precision optics (ultra-low noise CCD camera and f/0.70 lens aperture) and its wide spectral range detection (400 - 900nm), the system allows you to cover all your applications. From visualizing infections in plants (like *Arabidopsis thaliana*) leaves and seedlings, to comparing plant virology, plant growth or plant stress tolerance, researchers will be able to benefit from an innovative and user-friendly interface to observe the lowest signal intensities in a live 3D sample reconstruction. In the end, the NEWTON 7.0 BIO is an instrument that is specifically made for absolute quantification and offers you the perfect mix between high sensitivity and deep analysis capabilities.



Scintica:

VILBER



UNRIVALLED SENSITIVITY AND SHARPNESS

The NEWTON 7.0 BIO proprietary optics have been specifically developed for macro imaging with high light collection capacity, incorporating a unique combination of high numerical aperture and long working distance. Our system is equipped with a high-resolution scientific CCD camera which means better performance in pattern recognition. Bright fluorescence observation can be performed in a rapid scanning mode that shortens exposure times and minimizes specimen damage.



MULTISPECTRAL AND FLUORESCENCE IMAGING

Our dual magnetron filter technology ensures transmission above 90% and very narrow band cutting. The time to get the image is drastically reduced and sensitivity is increased. Our system accommodates 8 excitation channels in the visible RGB and NIR spectrum (from 400 to 900nm). Signals can be overlaid so that several reporters can be visualized simultaneously. The very tight LED spectrum is additionally constrained with a very narrow excitation filter. This means less background in the images (ultra-low noise imaging) of your sample and a higher signal to noise ratio to detect the weakest signals



BEST CAMERA PERFORMANCE

The NEWTON 7.0 BIO is equipped with a high-sensitivity scientific CCD camera with a proprietary lens offering the widest aperture in the industry (f/0.70) as well as a deep camera cooling down to -90°C to ensure the best signal to noise ratio (which is ideal for faint luminescence applications). With up to 4.6 image resolution, obtain the sharpest details from your samples.



HEIGHT ADJUSTABLE PLANT STAGE

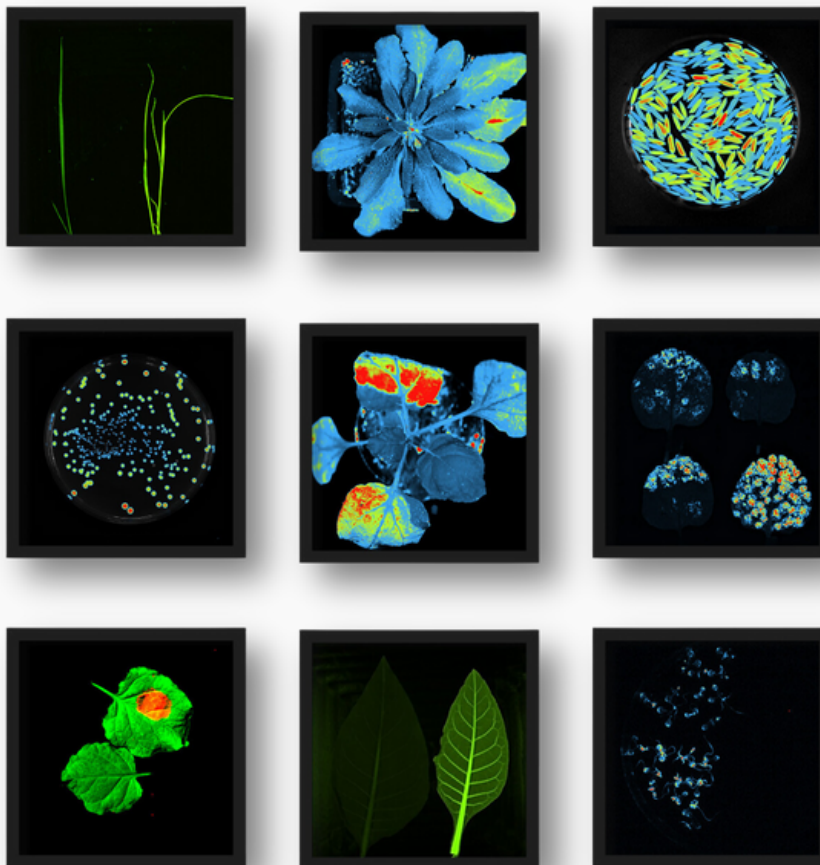
Whole plants up to 30 cm height can be fit inside the chamber. The rotating stage is motorized on the Z axis and can be tilted by 15° on the X/Y axis. Inclination is controlled from the software, avoiding time consuming manipulation.

BIOPHOTON EMISSION

Monitor cellular activity in living organisms, such as plant stress, non-invasively and in real time by detecting and visualizing the light they emit.

ALL THE APPLICATIONS YOU NEED IN ONE SYSTEM

Visualize comparative plant virology, genetic regulation, circadian rhythms, stress tolerance, regulation of plant growth and monitor infection (viruses, diseases etc).



LUCIFERASE & GFP EXPRESSION

Investigate the behavior and interactions of specific proteins in real-time and in their native environment thanks to GFP expression. Track gene expression, understand plant physiology, characterize and distinguish between various microbial infections or cloned plant screening using luciferase.

DELAYED FLUORESCENCE

Measure the time delay between light absorption and re-emission to study the photosynthetic activity and health of plants. Reveal the presence of hidden stresses that are not detectable by traditional methods, which is very useful for crop management and plant breeding.

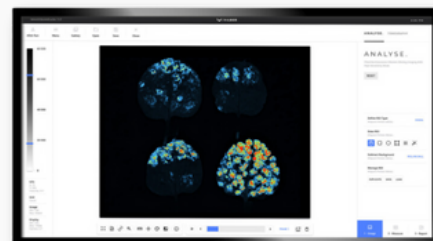
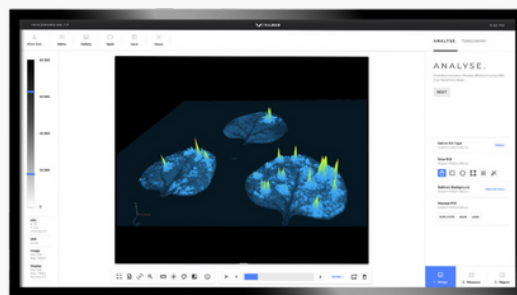
CHLOROPHYLL FLUORESCENCE

Capture the fluorescence emitted by chlorophyll molecules within leaves to assess the photosynthetic efficiency and stress level within plants. Get critical insights into the impacts of environmental stresses on plant health and productivity and address global food security challenges.

WHAT SMART MEANS

GET YOUR IMAGES IN ONE CLICK

Make publication-ready scientific images with simplicity for an unlimited number of users. Benefit from our 3D Dynamic Scan technology and observe the different signal intensities in a live 3D video reconstruction which will help you to detect signal concentration. The unique color imaging mode helps you acquire a quick snapshot of your plants with a true color representation, making the documentation faster! Our system's protocol driven image acquisition is as quick as it is intuitive: adjust your exposure, save, print or quantify. Various imaging modes are available from automatic, manual, or time-lapse imaging program. Time series could be constructed from images acquired on different days. You can also monitor the growth of a plant overtime thanks to the daylight and nightlight simulation modes through the software. Finally, you choose the leaves you want to focus on with one click.



ABSOLUTE QUANTIFICATION

"AN INSTINCT FOR TRUTH" - LOUIS PASTEUR



- **ABSOLUTE NIST TRACEABLE CALIBRATION**

Absolute NIST Traceable Calibration Imaging is based on traceable references provided by the National Institute of Standards and Technology (NIST). It allows precise quantification of specific biomolecules (such as proteins) in the sample of interest and provides benefits such as accuracy, reproducibility, and standardization.

- **IT ALL MAKES SENSE**

Absolute quantification allows researchers to compare and integrate data from different studies or laboratories. Unlike relative quantification, which compares the amount of an analyte between two or more samples, absolute quantification provides a precise value for the amount of substance in the sample, expressed in absolute units.

- **DETECTION CAPABILITIES**

Luciferase expression - Green fluorescent protein (GFP), red-shifted GFP expression - Chlorophyll phosphorescence - NIR illumination

- **CHOICE OF SAMPLES**

Small plants - Fruits - Vegetables - Leaves - Cyanobacteria - Green algae - Seedlings - Insects - Blossoms - Roots - Mosses - Lichens - Fungi - Cell and tissue cultures

- **INCREDIBLE EASE OF USE**

Unlimited number of users of the software - Intuitive interface - One click to get the image - Auto-exposure and automatic illumination control - Adjustable stage

- **QUALITY ONLY**

Very robust design for long-term durability - Made of aluminium and stainless steel (no plastic) - Elegant, modern and compact design to fit your work environment

Specifications

• PERFORMANCE

Bioluminescence detection: picogram level
Fluorescence detection

• ILLUMINATION

Dual white-light LED panels
8 excitation channels:
440nm - 480nm - 540nm - 580nm
640nm - 680nm - 740nm - 780nm
11-position motorized filter wheel
8 narrow bandpass emission filters:
500nm - 550nm - 600nm - 650nm
700nm - 750nm - 800nm - 850nm

• DETECTION CAPABILITIES

Automatic, manual & serial acquisition modes
3D live dynamic scan
Image editing and image analysis included
Chemiluminescence and fluorescence on
Western, Northern or Southern blot.

• SOFTWARE

Automatic, manual & serial
acquisition modes
Image editing and image analysis
including bioluminescence and
fluorescence on whole plants to
seedlings.

• CAMERA & OPTICS

Scientific grade 16-bit CCD camera
Grade 0, 400-900nm / 4.8 O.D.
-90°C cooling
f/0.70 motorized lens aperture
Resolution: 2160x2160 pixels
Peak quantum efficiency: 80%
FOV minimum: 6x6cm (macro imaging)
FOV maximum: 20x20cm

• HARDWARE CAPABILITIES

Intelligent darkroom concept
Fully-automatic system
• Motorized optical lens
• Z-axis motorized camera
• 15° tilting sample stage

• COMPATIBLE DYES & STAINS

CFP, GFP, YFP, RFP, FITC, DAPI, Alexa Fluor®
680, 700, 750, Cy® 2, 3, 5, 5.5, DyeLight,
IRDye® 680, 800CW



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