RWD

Preclinical *In Vivo* Optical Imaging System

Stereotaxic Instrument

Osmotic Pump

Anesthesia Machine

02 **Animal Surgical Instruments**

01 **Model Preparation**

Animal Surgery

Cryostat

03 **Pathological Section Solution**

Rotary Microtome

In Vivo Imaging System

Cell Counter

05 **Cell Monitoring**

04 **Cell Sorting**

Single Cell Suspension Preparator

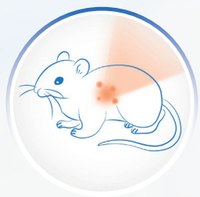
Nanomagnetic Bead Cell Sorting

Centrifuge

Cell Culture Incubator

Fluorescence Imaging

X-Ray Imaging



Bioluminescence Imaging

RWD Life Science Co.,Ltd

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Company Overview

Shenzhen RWD Life Science Co., Ltd., founded in 2002 and headquartered in Shenzhen, is a National High-Tech Enterprise serving the global life sciences market. Guided by the mission to "contribute wisdom and strength to the improvement of life quality," RWD has evolved over 23 years from a single equipment maker into an integrated platform supporting fundamental research, applied development, industrial transformation, and clinical care.

I. Solid Foundation, Dynamic Growth – A Model of Sustainable Progress

• Deep Industry Expertise: Focused on life sciences, animal health, and clinical medicine for over 23 years, we have built profound technical capabilities and a robust operational system.

• Strong Growth Momentum: Through sustained R&D and precise market strategy, RWD has achieved a compound annual revenue growth rate exceeding 50% for several consecutive years, demonstrating significant potential and future prospects.

II. Integrated Solutions and Core Technologies: Excellence Across the Research Pipeline

• Matrix of Seven Core Solutions: We have seven integrated solutions spanning all key life science research areas, including Animal Surgery & Modeling, Neural Signaling, Animal Behavior, Microcirculation & *in vivo* Imaging, Tissue & Molecular Pathology, Cell & Molecular Biology, and Animal Diagnostics & Treatment.

III. Global Reach and Trusted Partnerships: A Proven Industry Contributor

• Established Customer Base: Over 40,000 customers worldwide, including 1,000+ research institutes, 2,500+ hospitals, 6,000+ academic institutions, 18,000+ biopharma companies, and 15,000+ veterinary clinics. Our tools support daily research and have enabled over 14,500 SCI publications.

• Recognition from Leading Institutions: Top academic centers—from Tsinghua and Peking Universities to Harvard, Yale, and Stanford—partner with and rely on RWD, affirming the quality and reliability of our products.

24
Years of Market Experience

800+
Employees

20+
Branch Offices

100+
Countries and Regions

100,000
Units Annual Production Capacity

10+
New Products Launched Annually

Product Introduction

Preclinical *In Vivo* Optical Imaging System

In vivo imaging utilizes photon penetration through tissues to enable real-time observation of cellular and molecular processes in living organisms. It is based on two primary modalities: bioluminescence and fluorescence imaging, operating mainly within the 540–800 nm range (red to near-infrared) to balance sensitivity and tissue penetration. This technology allows tracking of tumors, infections, and gene expression, supporting high-throughput, cost-effective, and long-term dynamic recording.

RWD' s Preclinical *in vivo* optical imaging system is a highly sensitive platform designed for small animal imaging. It supports bioluminescence, fluorescence, Cherenkov luminescence, and X-ray imaging, and is widely used in tumor development, stem/immune cell tracking, pharmacokinetics, and other research applications.

The system features a back-illuminated CCD with high quantum efficiency for superior low-signal detection. A fluorescence module with up to 26 narrow-band filters, combined with spectral unmixing technology, covers the spectral range of mainstream fluorescent probes for enhanced accuracy.

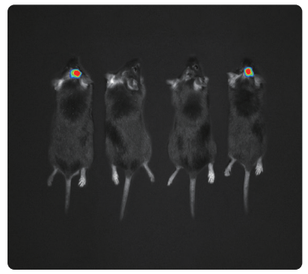
The MOIS series provides multi-scale imaging with a field of view ranging from 2.5 cm × 2.5 cm to 25 cm × 25 cm, supporting applications from single-point localization to whole-body dynamic observation. It is suitable for continuous tracking across multiple tissues and time points. The system also incorporates camera bias correction, flat-field correction, cosmic ray removal, and background suppression to ensure high image uniformity and reproducibility.

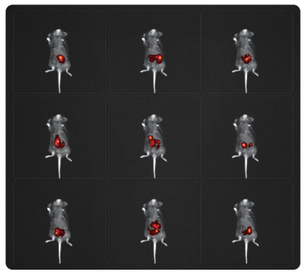
Disease Progression Monitoring
Cancer, Immune Diseases, Neurological Diseases, Cardiovascular Diseases, Infectious Diseases

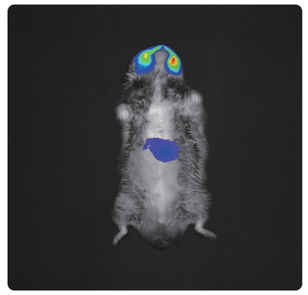
Immune Cell Dynamics
Immune Cells, Stem Cells, Virus Distribution, Cell Targeting, Cell Distribution, Cell Migration

Drug Development
Drug Screening, Efficacy Evaluation, Pharmacokinetics Studies, Drug Distribution Visualization

Gene Expression
Signal Pathways, Molecular Interactions, Gene Expression


Real-Time Tumor Progression Imaging


Drug Distribution Visualization

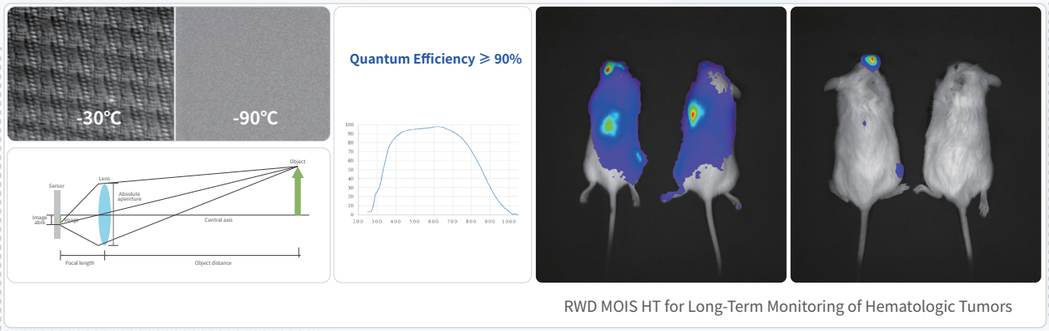

Dynamic Monitoring of Gene Expression


Cell Tracing

Core Features

Ultra-High Imaging Sensitivity

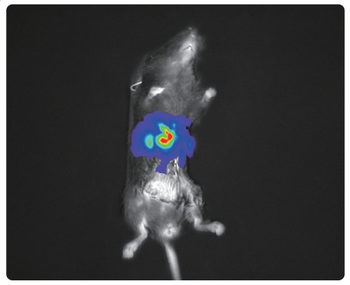
Paired with ⩾90% QE Back-Illuminated Scientific CCD Sensor and -90 °C ultra-deep cooling to minimize noise and preserve weak signals. f/0.95 Large Aperture Lens & High-Transmission Filters ensuring efficient photon capture and clean signal transmission for superior low-light imaging.
Accurately detects subtle signals from tumor growth and metastasis *in vivo* , enabling clear visualization of early-stage disease dynamics. Ideal for early diagnosis, mechanism studies, and treatment evaluation



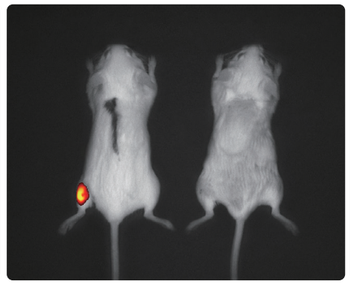
RWD MOIS HT for Long-Term Monitoring of Hematologic Tumors

Multimodal Imaging System

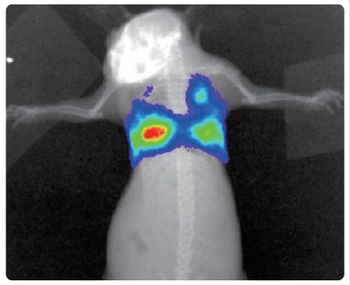
Integrates five imaging modalities—bioluminescence, fluorescence, X-ray, Cherenkov, and upconversion imaging—enabling unified and comprehensive imaging capabilities.



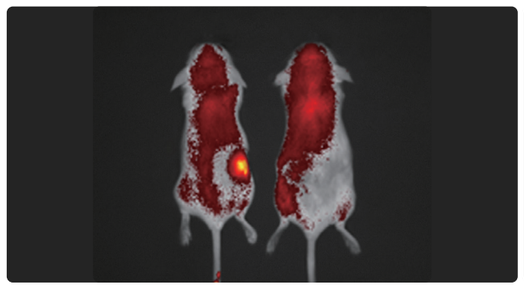
Bioluminescence



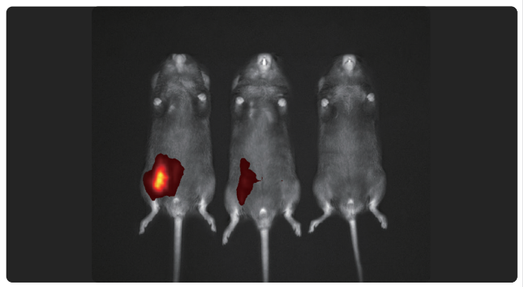
Flourescence



X-ray



Cherenkov



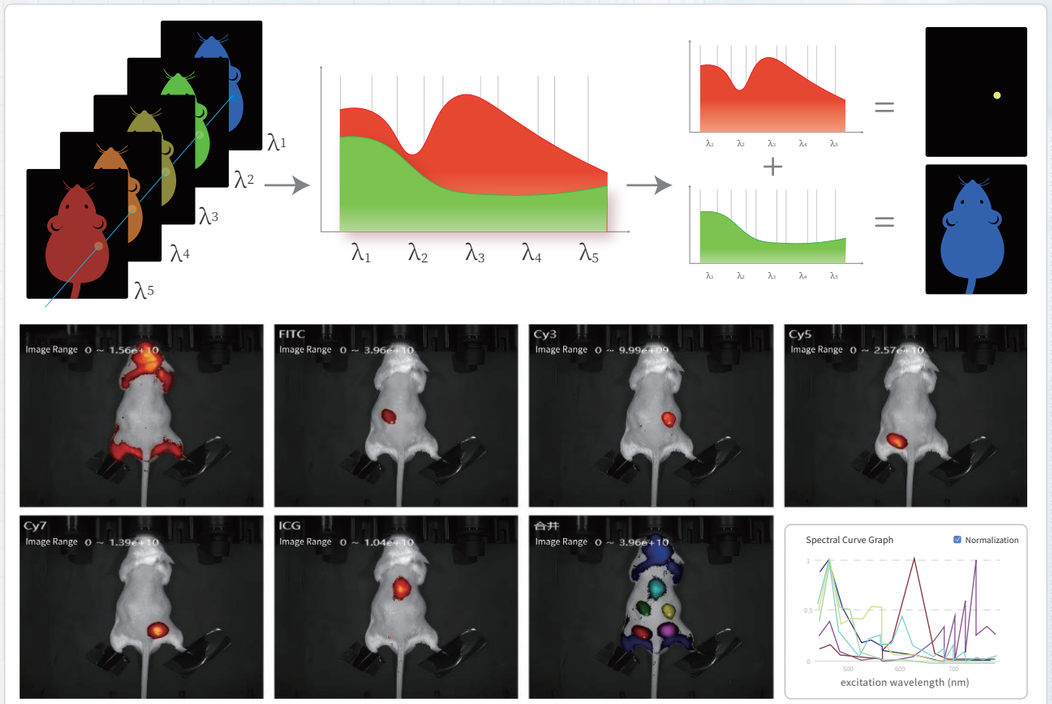
Upconversion Imaging

Multi-Calibration Ensures Data Accuracy

In small animal imaging, researchers often face a core challenge: while the subject emits specific fluorescent signals upon excitation, its own tissues and fur generate significant autofluorescence interference. The key to imaging quality lies in accurately capturing target signals and effectively distinguishing them from complex autofluorescence background. The signal-to-noise ratio is the critical metric for evaluating fluorescence imaging performance.

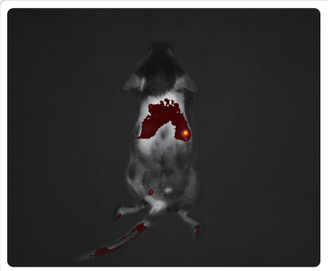
Patented Spectral Unmixing Technology ▶

Enables precise quantitative analysis of mixed spectra, accurately differentiating specific signals from autofluorescence. This technology completely resolves issues of spectral overlap and signal crosstalk.

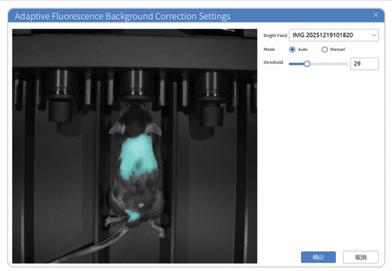


Efficient Background Subtraction Technology ▶

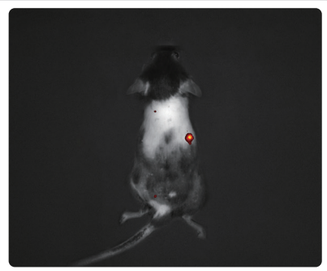
Eliminates autofluorescence background while maximizing the integrity of specific signals.



Before Background Subtraction



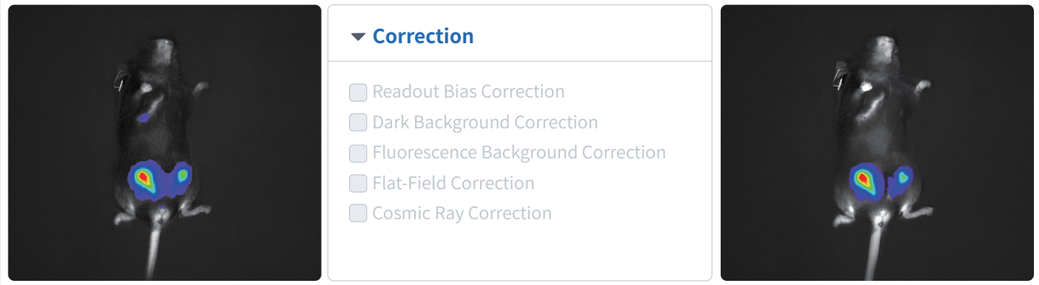
During Background Subtraction



After Background Subtraction

Multiple Correction Algorithms ▶

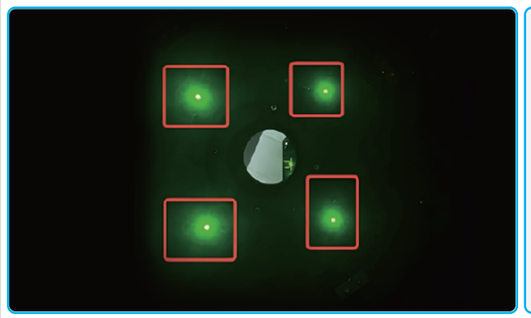
Advanced calibration algorithms—readout bias correction, flat-field correction, and cosmic ray correction—ensure data accuracy. Readout bias correction eliminates CCD circuit noise, flat-field correction removes optical distortion for uniform signals, and cosmic ray correction filters interference pixels, securing reliable experimental analysis.



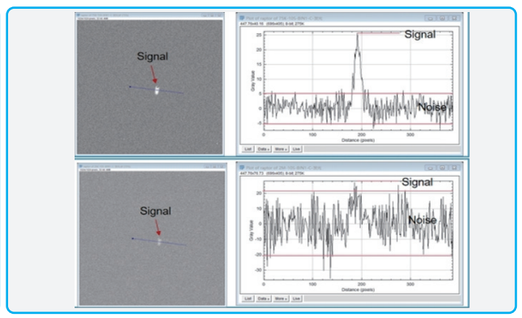
Before correction | During correction | After correction

Advanced Optical Path & Calibration

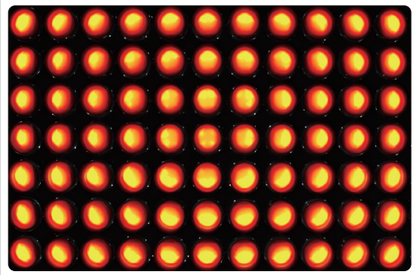
MOIS features optimized optical design and calibration technology to ensure uniform excitation light coverage, eliminating signal distortion from intensity variations. The system maintains consistent light intensity across all pixels, delivering accurate, reproducible data for long-term experiments and rigorous scientific research.



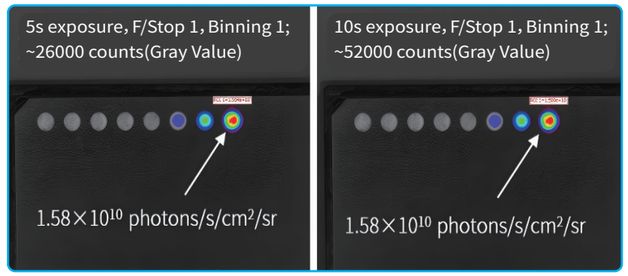
High-power Halogen Light Source



Low-autofluorescence Optic Fiber



Uniform Illumination Calibration

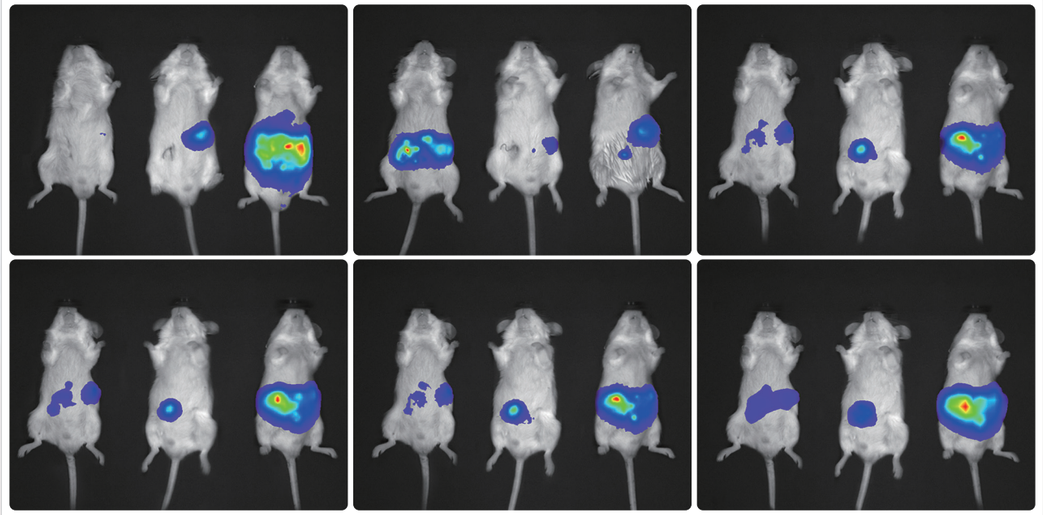


Quantification in Normalized Unit

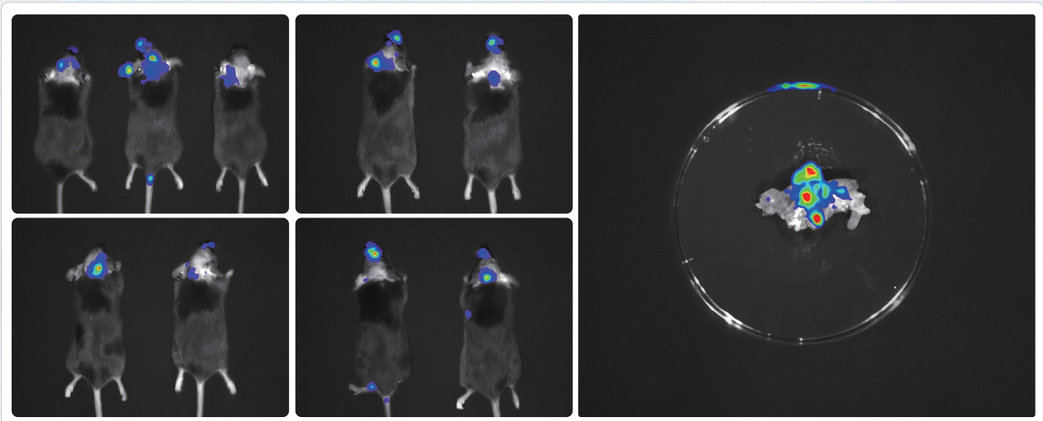
Application Areas

Disease Monitoring

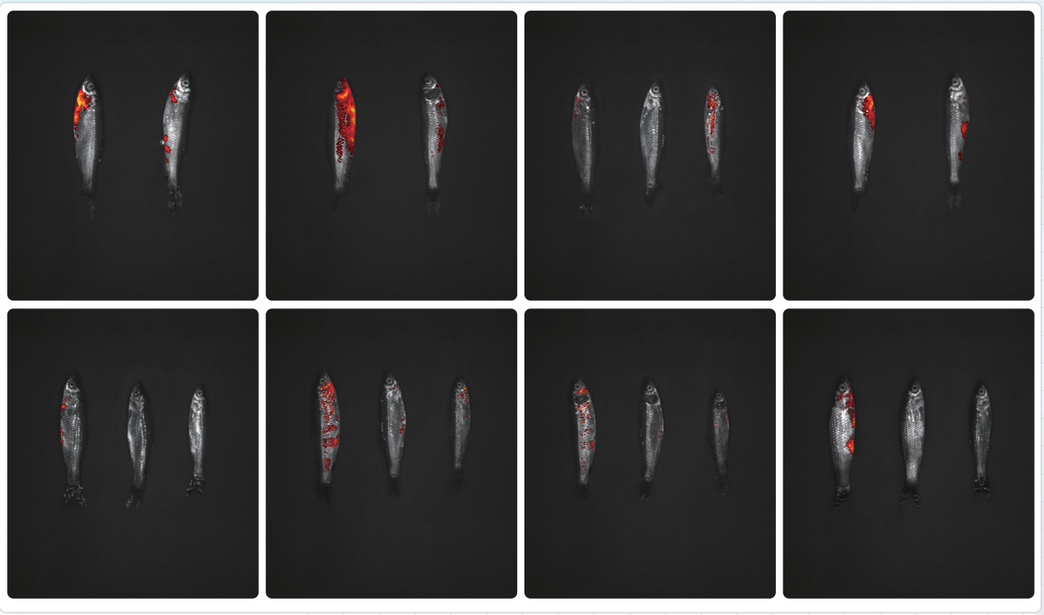
The MOIS preclinical *in vivo* optical imaging system enables non-invasive, real-time, and longitudinal tracking of disease progression and treatment response. Using fluorescent or bioluminescent markers (e.g., luciferase-labeled tumor cells), it visually monitors pathological processes such as tumor growth, metastasis, and inflammation in live animals, supporting dynamic evaluation of disease models. The system is particularly suited for efficacy assessment in oncology, metabolic diseases, and infection models, and validates outcomes of optical, acoustic, and immunotherapies. It provides critical visual data for mechanistic studies and therapeutic optimization.



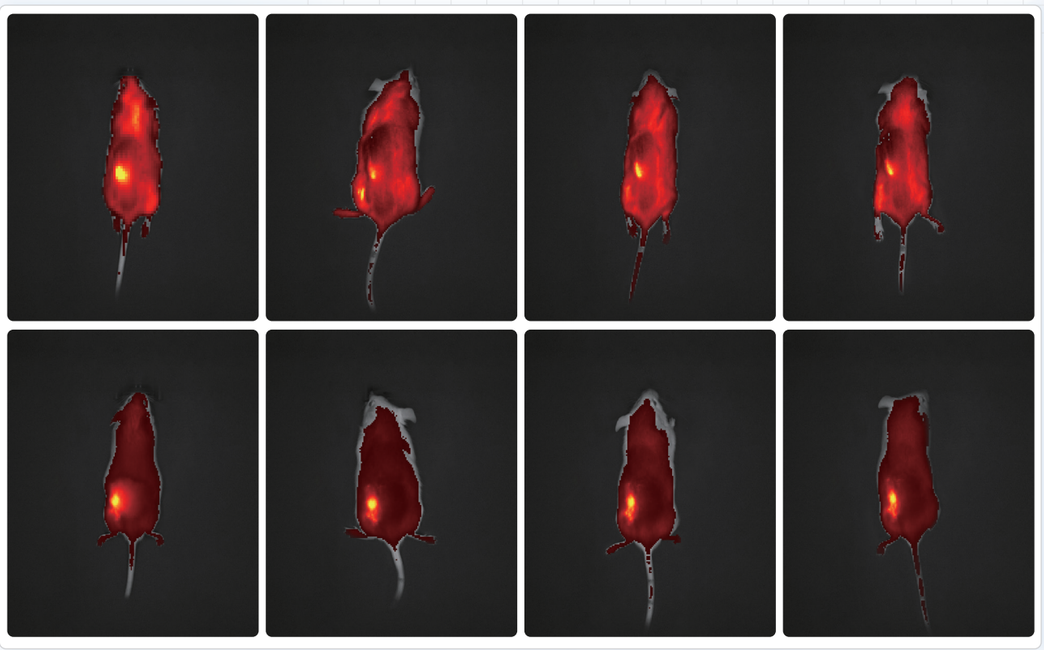
HCT116-Luc murine colorectal cancer cells (stably expressing luciferase) were orthotopically transplanted into the colon wall of mice to establish a clinically relevant orthotopic cancer model. The MOIS-HTP system enables real-time monitoring of tumor growth and metastasis.



Brain metastasis tracking in non-small cell lung cancer with MOIS HT. Revealing key microenvironmental characteristics of metastatic lesions.



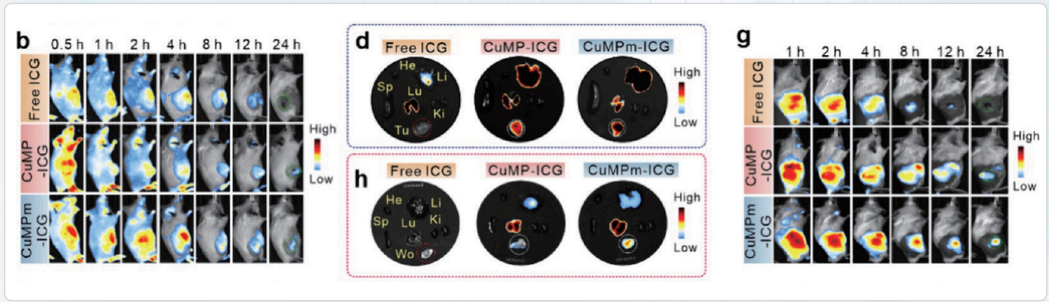
Zebrafish Inflammation Model: The MOIS HT system enables real-time tracking of inflammatory cell migration and aggregation in live zebrafish larvae using transgenic lines or fluorescent dyes.



Colitis Progression Monitoring: Tail vein injection of NIR fluorescent probes allows longitudinal, non-invasive visualization of colitis development via the MOIS HT platform.

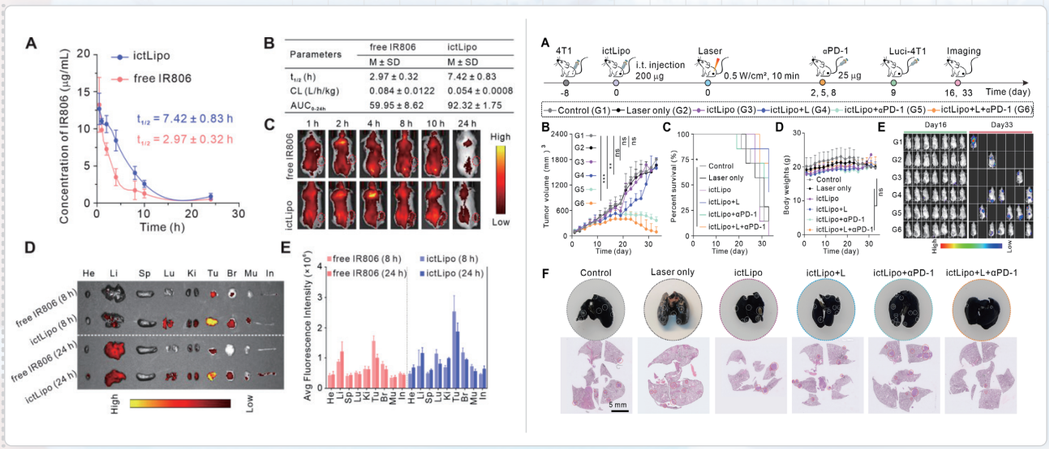
Drug Distribution

The MOIS preclinical *in vivo* optical imaging system enables real-time, non-invasive visualization of drug dynamics and targeted accumulation in living animals. By labeling drugs or nanocarriers with fluorescent/NIR dyes, it allows continuous monitoring of absorption, distribution, and target tissue enrichment—particularly useful for evaluating tumor-targeted delivery, blood-brain barrier penetration, and organ-specific accumulation. This provides critical visual data for optimizing drug formulations and assessing targeting efficacy.



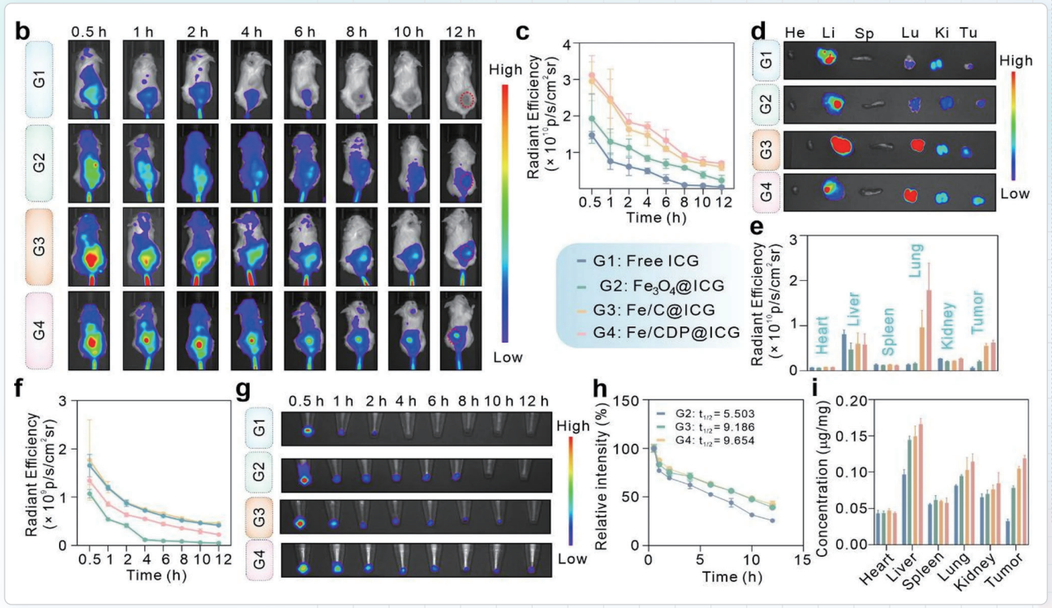
MOIS HT preclinical *in vivo* optical imaging system revealed significantly enhanced accumulation of mannose-modified CuMPmC nanoparticles at tumor and infected wound sites compared to unmodified particles. Sequential imaging tracked their spatiotemporal distribution, identifying optimal treatment windows. Ex vivo validation confirmed high target-tissue accumulation.

Source: Zeng X, et al. ACS Nano. 2025.



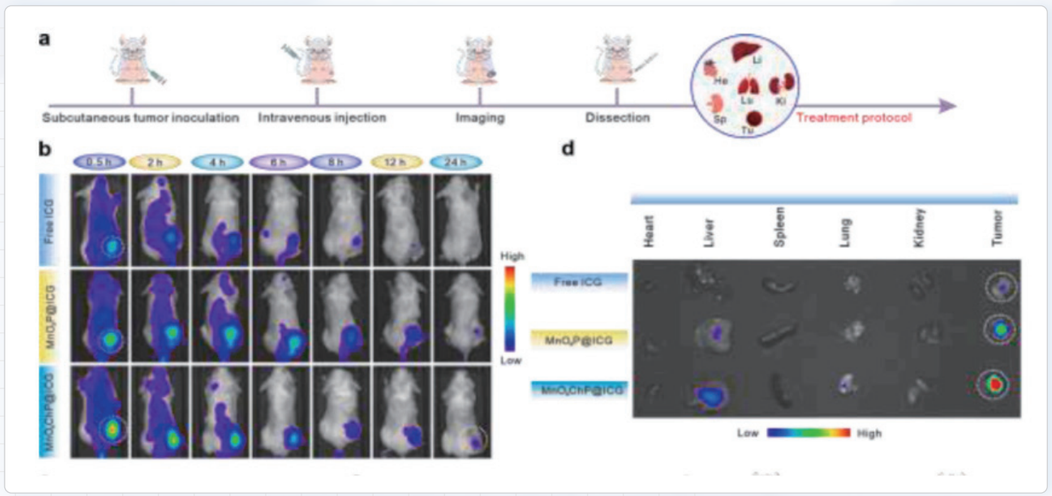
MOIS visualized dendritic cell maturation, T-cell infiltration, and exhaustion dynamics using fluorescent antibodies/reporter genes, uncovering spatial-temporal changes in the tumor immune microenvironment.

Source: Xue P, et al. Exploration. 2025.



MOIS HT provided visual and quantitative evidence for the targeting and efficacy of the Fe/CDP nanoplatform. Imaging showed clear time-dependent enhancement of fluorescence signals in tumors, with sustained accumulation up to 12h post-injection, confirming superior tumor targeting and retention. The data support a “membrane cholesterol modulation–drug sensitization–cancer stem cell elimination” therapeutic mechanism mediated by CD44-CS targeting.

Source: Ye L, et al. J Nanobiotechnol. 2025.



MOIS HT enabled real-time, non-invasive monitoring of ICG-labeled MnOxP and MnOxCHP nanoparticle distribution and tumor accumulation in 4T1 tumor-bearing mice. Imaging visually confirmed effective tumor enrichment and prolonged retention of nanoparticles, providing key evidence for their subsequent synergistic immunotherapeutic effects.

Source: Liu S, et al. Biomaterials. 2025.

Technical Specifications ▶

Module	Parameter	MOIS HTP	MOIS HT	MOIS HTX
Imaging Modality	Fluorescence Imaging	√	√	√
	Bioluminescence Imaging	√	√	√
	Spectral High-Resolution Imaging	√	√	√
	X-Ray Imaging	×	×	√
	Upconbersion Luminescence Imaging		Upgradeable	
Detector	Sensor Type	Back-Illuminated Scientific-Grade CCD		
	Operating Temperature	-70°C	-90°C	-90°C
	Pixel Array	1024×1024		
	Lens Aperture	F/stop ⩽ 0.95		
	Minimum FOV	5cm×5cm(Optional)		
	Maximum FOV	25cm × 25cm		
	Quantum Efficiency	⩾90% (500–700nm)		
Laser Module	Light Source	150 W Halogen Lamp (Broad Spectrum)		
	Indicator laser	Real-Time FOV Center Positioning		
Filters	Excitation Filters	19		
	Emission Filters	7		
Software	Online Acquisition Software	Real-time preview, time-series acquisition, multi-modal (BLI/Fluorescence) sequential imaging, synchronization module		
	Offline Analysis Workstation	Image analysis, time-series analysis (requires quantitative module)		
	Multi-Channel Chamber	5 Channels		
Environmental Control	Temperature Control Module	Range: 20–40°C, Accuracy: ±0.1°C		
	Anesthesia System	Isoflurane vaporizer, adjustable concentration: 0.5%–5%		