

OPEN
Inquire inside

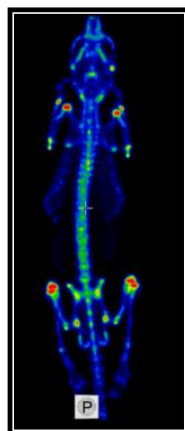
- Advanced molecular imaging facilities and services
- Cooperation/Collaboration

 Linkou Chang Gung Laboratory Animal Center

Advanced Molecular Imaging Platform encompasses pre-clinical animal imaging facilities that incorporate the state-of-the-art medical imaging modalities as well as professionals and well-trained imaging technologists. Our goal is to build a thorough translational imaging platform to advance the medical research and development.



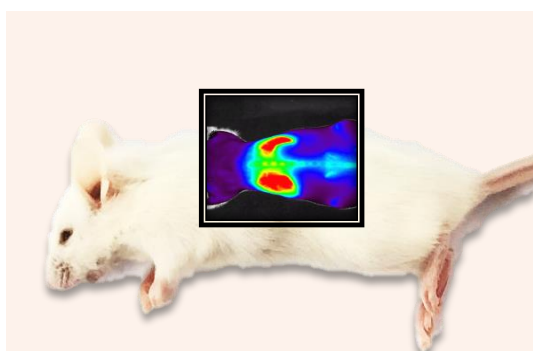
**nanoScan
SPECT/PET/CT**




The cutting-edge 9.4 Tesla MRI, equipped with various RF coils for rodents, is capable of digging into neural, skeletal and cardiovascular diseases, as well as metabolism and x-nuclei spectroscopy.




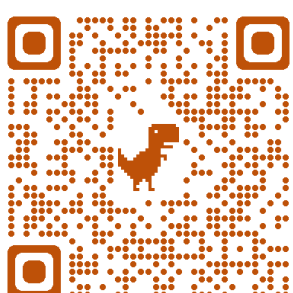
HistoFAXS is a motor-driven, high-end microscopic system to capture sample images from immunohistochemistry (IHC) or immunofluorescence (IF), and further quantify them accordingly.



XENOVEN IVIS is the fluorescence and bioluminescence imaging system, which can offer high throughput of 5-10 mice at once. It has been widely used in various fields regarding cancer, gene, stem cells, and fluorescence probes.

 Inline multimodalities promise precise localization and accurate quantification.

 Multidisciplinary applications including oncology, hematology, immunology, nanomedicine, neurology, stem cells, and drug development.



+886 3-3281200 # 7707



animalexp@cgmh.org.tw



<https://cghdpt.cgmh.org.tw/dept/3S100>



Advanced Molecular Imaging Platform Service Charges



Pre-clinical 9.4T MRI

Ultra-high field MRI yielding higher SNR and sensitivity than conventional imaging.

Academia
NT\$ 9,000 /hr
Industry
NT\$ 14,000 /hr



Pre-clinical PET/CT

Three-dimension images oriented from target organs with specific radioactive tracers.

Academia
NT\$ 3,600 /hr
Industry
NT\$ 5,500 /hr



Pre-clinical SPECT/CT

Two- or three-dimension organ images from γ -ray emitted by specific radioactive tracers.

Academia
NT\$ 5,000 /hr
Industry
NT\$ 7,200 /hr



Pre-clinical microCT

Dedicated animal tomography, for cardiovascular, osteology, and biomaterials research.

Academia
NT\$ 4,200 /hr
Industry
NT\$ 6,300 /hr



XENOGEN IVIS

High throughput fluorescence and bioluminescence imaging.

NT\$ 1,000 /hr



Hi-Res ultrasound imaging

Dedicated animal ultrasound system equipped with high frequency probes.

NT\$ 1,500 /hr



HistoFAXS

Modulated IHC and IF microscopic system including acquisition and analysis.

NT\$ 400 /hr



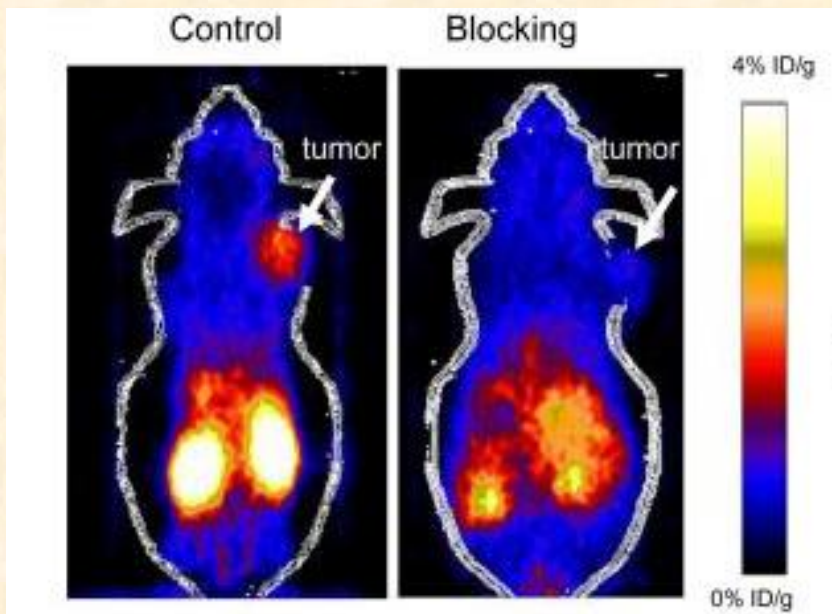
FVMPE-RS (Duel-photon Microscope)

Multi-wavelength excitation and high frame rate scanning.

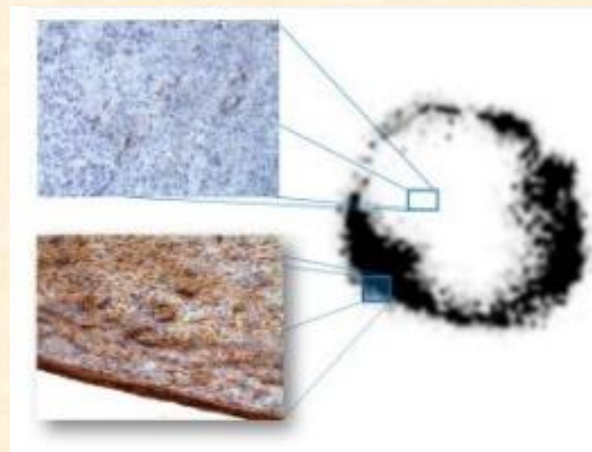
Academia
NT\$ 2,000 /hr
Industry
NT\$ 3,000 /hr



After PET/CT or SPECT/CT scanning, molecular images subsequently merged with anatomical images to quantify drug bio-distribution and specificity in the either static or dynamic manner. With the aid of Autoradiography and ex-vivo gamma counting, we can even validate the tissue uptake.



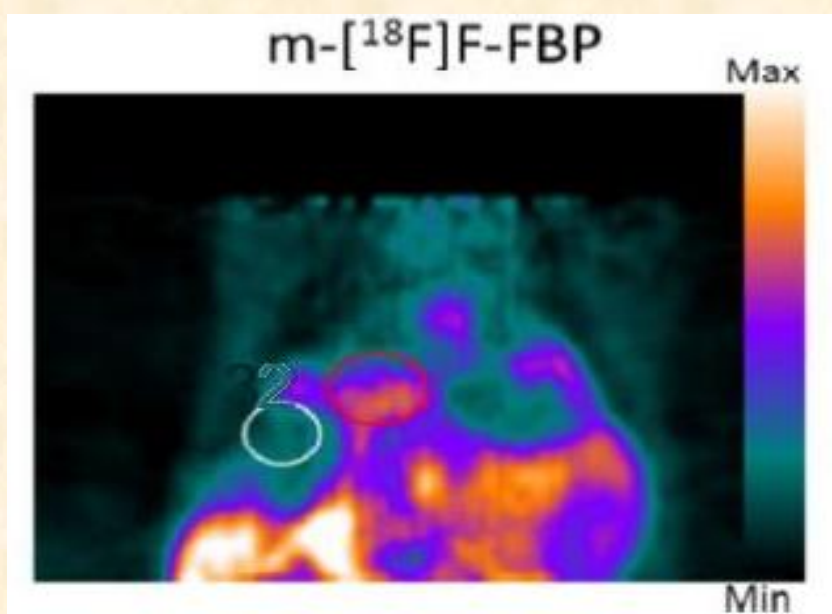
Mol Pharm. 2014 Nov 3;11(11):3904-14



Hi-Res. Autoradiography ensures radionuclides distribution in tissues.

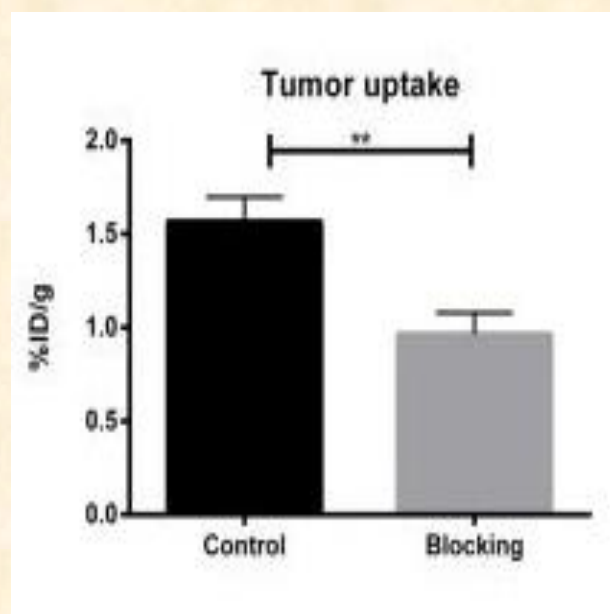
Mol Pharm. 2014 Nov 3;11(11):3904-14

Synthetic compounds



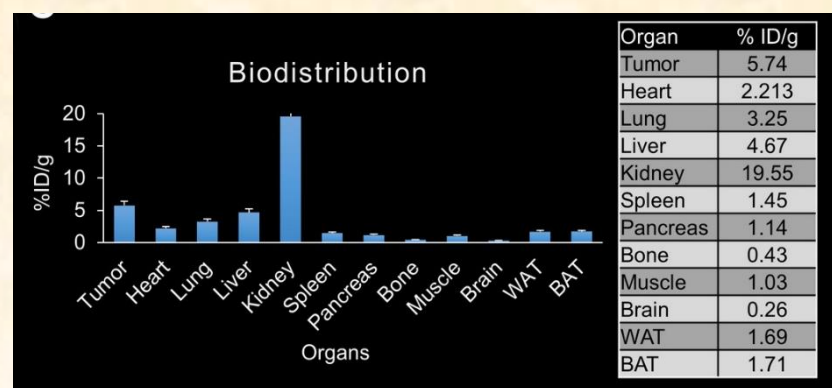
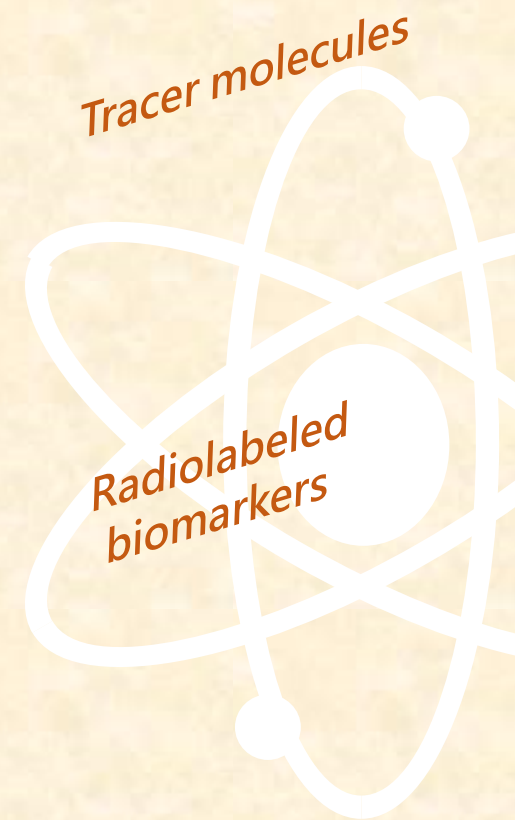
Dynamic scan and measurement of radionuclides in tumors or specific organs.

Eur J Pharm Sci. 2017 Sep 30;107:217-229



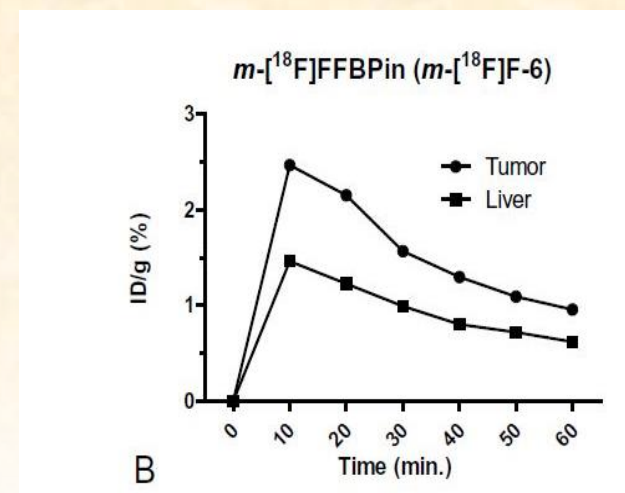
The efficacy and specificity estimate of radiolabeled target therapy.

Mol Pharm. 2014 Nov 3;11(11):3904-14



Biodistribution of radiopharmaceutical uptake in organs.

J Nanobiotechnology, 2021 Jun 13;19(1):180



Eur J Pharm Sci. 2017 Sep 30;107:217-229

Biodistribution

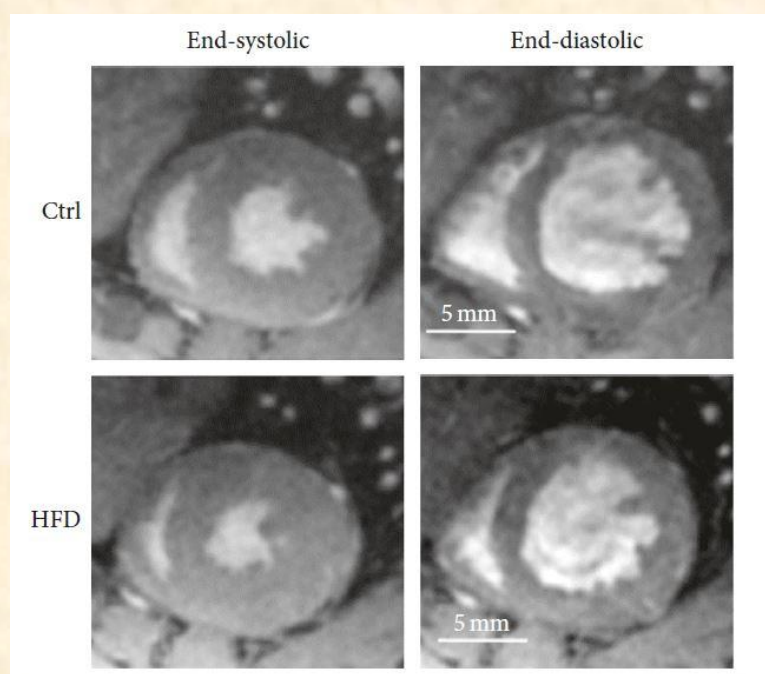
Quantification

Nuclear Medicine & Radiopharmaceutical Imaging and Validation



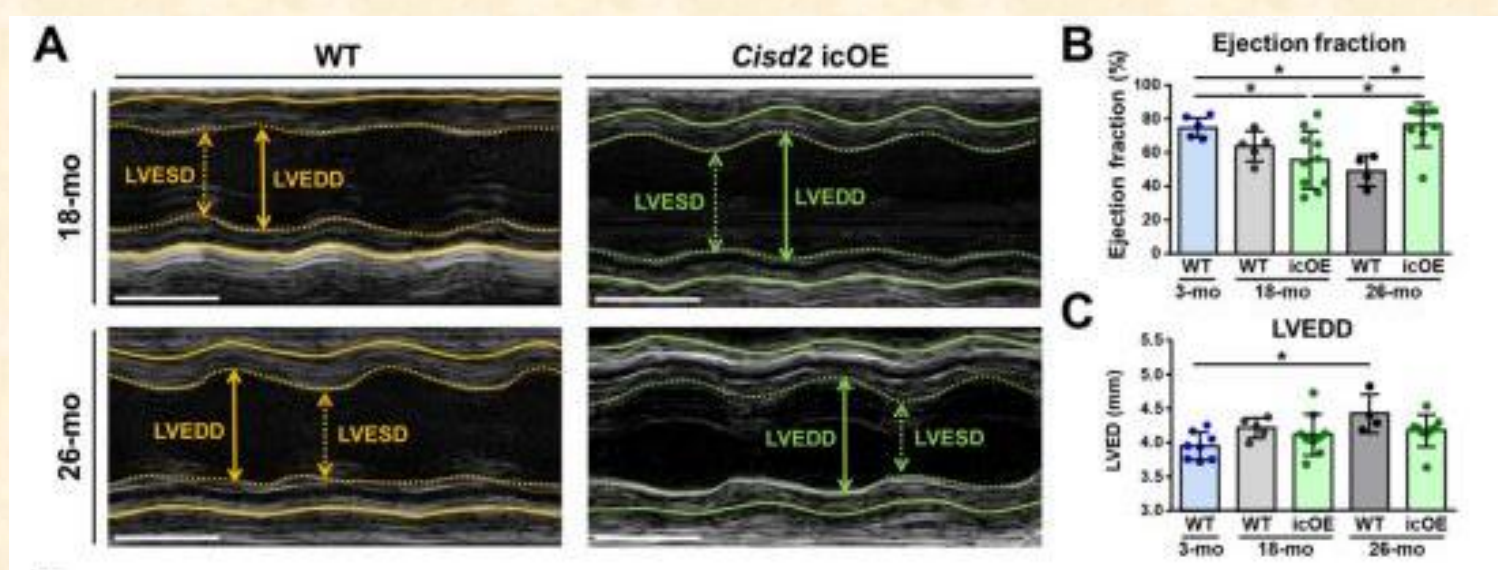
Advanced Molecular Imaging Platform
Linkou Chang Gung Laboratory Animal Center

By a combination of high-resolution MRI and high-sensitivity sonography, we can image and evaluate cardiac function, by means of ventricular ejection fraction, myocardial thickness, end-diastolic LV volume, end-systolic LV volume, aorta dimension, and the valves functionality.



Schematic shows cardiac MRI and sonography with some statistics respectively.

Contrast Media Mol Imaging. 2018 Jul 12;2018:8751267.



Int. J. Mol. Sci. 2021, 22, 11487

TABLE 1: Comparison of the cardiac function of control and HFD rats.

Cardiac function	Control (<i>n</i> = 9)	HFD (<i>n</i> = 9)	<i>P</i> value
Ejection fraction (%)	73.32 ± 0.8229	79.50 ± 1.799	0.0096*
Stroke volume (μl)	322.2 ± 24.22	317.7 ± 23.52	0.8953
LV volume of ED (μl)	439.9 ± 32.71	399.0 ± 26.79	0.3415
LV volume of ES (μl)	117.7 ± 9.545	81.33 ± 7.833	0.0081**
Cardiac output (μl/min)	133.7 ± 10.06	131.9 ± 9.765	0.8987
ED segmented wall thickness (mm)	3.061 ± 0.068	3.391 ± 0.098	0.0168*

Values are expressed as mean ± SD. The cardiac function of the control and HFD rats was measured from CMR images and QMass Software; **P* < 0.05 and ***P* < 0.01 versus control; LV = left ventricle; ED = end-diastolic volume; ES = end-systolic volume.



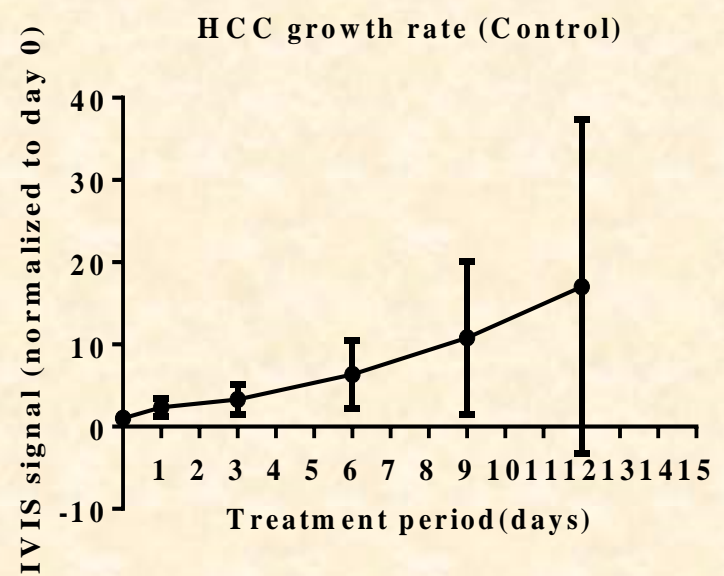
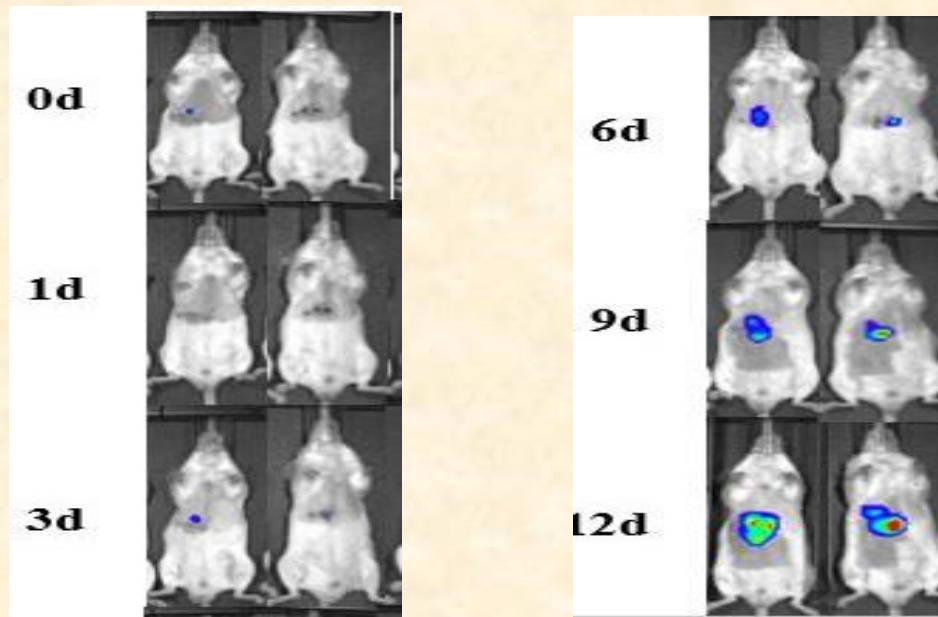
Cardiovascular Imaging and Evaluation



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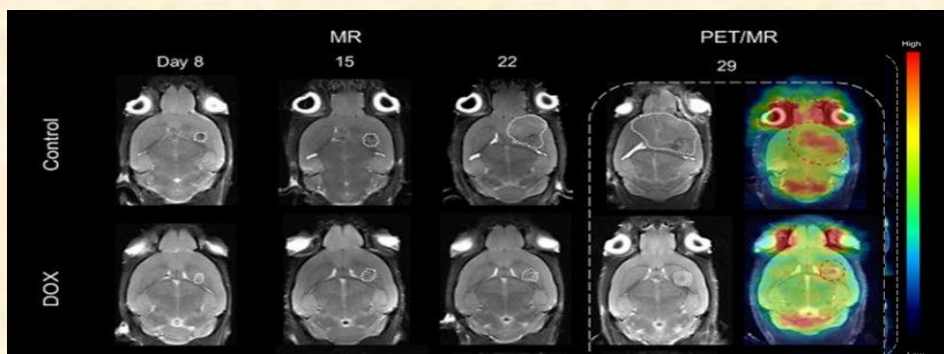
Tumor growth and treatment response

In collaboration with IVIS and MRI in a longitudinal study, a series of images apparently exhibit luciferin activity, metastasis, and tumor growth trend, which helps from carcinoma in-situ animal modelling to treatment planning.



Tumor size measurement correlated with treatment response.

J Nanobiotechnology, 2021 Jun 13;19(1):180



Bone marrow ablation animal model

Experimental animals exposed by Cesium-137 irradiation have been a model for transplantation surgery, leukemia, stem cell therapy, and pharmaceuticals research. A single-dose, whole-body irradiation will be performed, yet the total dosage is adjustable.



Tumor Growth Monitor and Treatment Planning Bone Marrow Ablation Animal Model



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