



NEW GATING MODULE FOR THE GNEXT PET/CT

About Gating

Gating methods can provide clearer, more effectual images through the reduction of motion artifacts incurred by cardiac or respiratory movement. This results in improved visualization of cardiac and pulmonary regions, promoting increased precision in the assessment of structure and overall function. Additionally, gating methods can allow for more data to be collected over the course of an acquisition or scan, which can help to further disseminate areas of possible defects caused by oncological, pathological, or chemically induced factors.



native software to trigger, or initiate acquisitions at user-specified points of acquisition, also called "gates." This is established through isolation of specific time points in the cardiac or respiratory cycle

where there is least movement to minimize motion artifact.

The gating system will help to utilize gating capabilities of the GNEXT acquisition software and will support up to three mice for simultaneous gated imaging.

Heart rate and cardiac/respiratory functioning can be significantly influenced by fluctuations in body

temperature. To ensure that the animal's body temperature is properly regulated during imaging, a small rectal temperature probe is used in addition to ECG and respiratory monitoring while steady body temperature during anesthetization is maintained using imaging beds with warming capabilities.

The Gating Module

The SA Instruments 1025T gating system and module will work in tandem with the GNEXT PET/CT and its

The SA Instruments 1025T gating system also offers respiratory gating, which can be useful for lung imaging or imaging environments not conducive for ECG monitoring and cardiac gating.

REFERENCES

Betts, J.G., Desaix, P., Johnson, E., Johnson, J.E., Korol, O., Kruse, D.,...Young, K.A. (2019). Cardiac cycle. *Anatomy and physiology* (pp. 127). Retrieved from <https://opentextbc.ca/anatomyandphysiology/chapter/19-3-cardiac-cycle/>

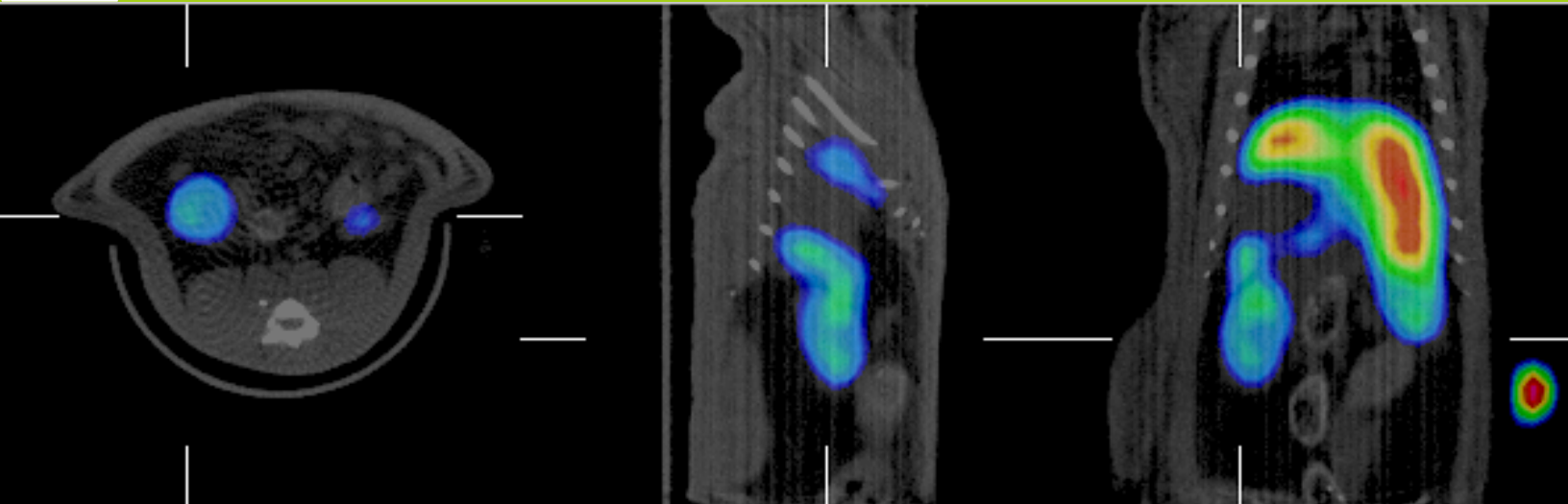
Wu, C., Vaissier, P. E. B., Vastenhouw, B., de Jong, J. R., Slart, R. H. J. A., & Beekman, F. J. (2015). Influence of Respiratory Gating, Image Filtering, and Animal Positioning on High-Resolution Electrocardiography-Gated Murine Cardiac Single-Photon Emission Computed Tomography. *Molecular Imaging*. <https://doi.org/10.2310/7290.2014.00052>

**WOULD YOU LIKE YOUR IMAGE FEATURED
IN THE UPCOMING SAIF NEWSLETTER?**

SEE PAGE 5 FOR MORE DETAILS



FEATURED IMAGE OF THE QUARTER



UPTAKE OF RADIOPHARMACEUTICAL IN RAT LIVER AND KIDNEYS

Tc-99m tilmanocept is an FDA-approved radiopharmaceutical diagnostic agent used for tumor targeting and to pinpoint macrophage accumulation. It is typically used in lymphatic mapping and lymph node localization in breast cancer, melanoma, and other solid tumors by binding to surface receptors on reticuloendothelial cells (such as macrophages and dendritic cells) that are highly expressed in lymph nodes.

From Left to Right: Transverse, sagittal, and coronal views (respectively) of rat imaged using Gamma Medica XSPECT/CT after intravenous injection with Tc-99m tilmanocept.

Image credit:

Dr. Jennifer Bartels, Research Associate (Dr. Lapi)

Solana Fernandez, Researcher (Dr. Lapi)

Erika McMillian, Researcher (SAIF)



FEATURED INSTRUMENT



GAMMA MEDICA XSPECT/CT

The Gamma Medica XSPECT/CT is a dedicated small animal imager with SPECT and high-resolution CT capabilities. This system allows for imaging of a variation of small animals such as mice, rats, and even ferrets. As a noninvasive mode of imaging, the SPECT can provide temporal and static visualization of regions of interest affected by oncological, pathological, or chemical factors through detection of gamma-emitting radioisotopes, all without causing any discomfort to the animal. CT can be used in association with acquired SPECT data as a location marker, or alone to observe possible injury, fluid-uptake, or structural integrity of specific regions.

➤ **Pre-Clinical Imaging Calendar**

Check for any available time slots for imaging modalities.

➤ **Training Forms**

Download training material for submission prior to scheduling imaging.

➤ **Perkin Elmer Resources**

Educational material related to the IVIS Lumina III.

➤ **Department of Radiology**

Homepage for UAB's Department of Radiology.

➤ **O'Neal Comprehensive Cancer Center**

Homepage for O'Neal Comprehensive Cancer Center at UAB.

➤ **O'Brien Center**

Homepage for O'Brien Center for Acute Kidney Injury Research.

➤ **UAB Cyclotron Facility**

Homepage for UAB's Cyclotron Facility.



DID YOU KNOW?

You can apply for pilot funds to develop an imaging protocol.

The UAB Department of Radiology has partnered with the Center for Clinical and Translational Science (CCTS) in the development of a voucher program that promotes imaging research for the advancement of patient care and public health. The **Radiology Imaging Development Voucher Program** provides financial assistance (up to \$5,000) with imaging protocol development for multiple modalities including the CT, MRI scanners, and all Small Animal Imaging modalities. Find out more about the voucher program and its application process by visiting the CCTS website below.

CONTACT US

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MRI

NUCLEAR

OPTICAL

MRI

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LOCATIONS

Volker Hall Laboratory

1670 University Blvd.

Rm. G082G, 975-6465

WTI Imaging Suite

WTI 630D

MRI 9.4T Imaging Suite

LHL B15, 934-0265

Volker Hall Imaging Suite

VH B21A, 975-6466

SAIF MODALITY PRICING



Labor charges are **\$40 per hour** (for each personnel), when assisted during imaging.

Prices effective 11/1/2018.



Training is available on some modalities, **free of charge**.

MODALITY	COST*	INSTRUMENT
Bioluminescence	\$7/mouse OR \$55/hour (reagent dependent)	IVIS Lumina III
Fluorescence	\$55/hour	IVIS Lumina III
		Custom Leica microscope with Nuance CRI spectral camera
Ultrasound	\$75/hour	Vevo 660
MRI	\$125/hour	Bruker 9.4T
SPECT/CT	\$100/hour + dosing	X-SPECT system
PET/CT	\$200/hour + dosing	Sofie GNEXT PET/CT
Gamma Camera	\$20/hour + dosing	Picker Camera with Numa computer
Specialty Fluorescent Imaging	\$100/hour	Li-Cor Pearl Impulse
		Luna/SPY Systems
Staff Image Analysis	\$40/hour	

Non-Cancellation Policy

If user is not present at scheduled appointment time without prior notification of cancellation, user will be charged an **hourly-use fee** for that instrument.



Image Submissions

Submit images that you would like featured in the newsletter to erikanmc@uab.edu. Please include PI's name, modality, brief experiment summary, and species.

Publication Reference

If you have received services through this core for grants and publications, please acknowledge support by citing UAB Comprehensive Cancer Center's Preclinical Imaging Shared Facility Grant P30CA013148.

For published data obtained with the IVIS Lumina III systems, please cite S10 instrumentation grant 1S10OD021697.