

## **NEWS BRIEF**

### **GE Healthcare Offers Total Molecular Imaging Solution to Advance Precision Health and Theranostics**

Molecular Imaging (MI) is in a unique position to deliver a different, more personalized type of healthcare. MI offers clinicians distinct opportunities in the pursuit of precision health and has given rise to theranostics, a new field of medicine that combines targeted therapies with targeted diagnostic tests.

Today, GE Healthcare offers a Total MI solution to its customers, with products spanning from cyclotrons and chemistry systems, to PET and SPECT devices, to digital applications.

“In our pursuit of precision health, we remain committed to elevating the practice of molecular imaging through Total MI solutions across multiple care areas,” says Jean-Luc Procaccini, President and CEO, MICT, GE Healthcare. “We believe we are in a unique position to help connect teams, data and decisions in every step – from discovery to diagnosis to treatment – with intelligently efficient innovations designed to help clinicians deliver precise, personalized care.”

#### **PET/CT**

At RSNA 2020, GE Healthcare is proud to feature **Discovery MI Gen 2**, the latest addition of to its fleet of PET/CT scanners.

“Building on the performance standards set by Discovery MI, Discovery MI Gen 2 is the is the only PET/CT system that brings together the highest sensitivity<sup>1</sup> of digital detection with the innovative reconstruction technology available in CT: Deep Learning Image Reconstruction for TrueFidelity CT Images,” explains Jamie McCoy, General Manager, Global PET, GE Healthcare. “This deep learning solution can elevate every CT image to a powerful first impression with impressive image quality performance<sup>2</sup>, and preferred image sharpness and noise texture<sup>3</sup> – to help inform clinical diagnoses without compromising the low dose levels to which clinicians have grown accustomed.”

To do this, Discovery MI Gen 2 uses a dedicated deep neural network to generate **TrueFidelity CT Images**, which have the potential to improve reading confidence in a wide range of clinical applications such as head, whole body and cardiovascular, for patients of all ages.

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<sup>1</sup> Discovery MI Gen 2 has the highest NEMA sensitivity in its class in the market, comparing with common PET/CT systems with same or similar AFOV (based on IMV's Medical Information Division's 2019 report as the manufacturers representing more than 90% of the US Installed Base).

<sup>2</sup> Image quality comparisons between DLIR and ASiR-V, were evaluated by phantom tests of MTF, SSP, axial NPS, standard deviation of image noise, CT Number accuracy, CNR, and artefact analysis. Additionally, LCD was demonstrated in phantom testing using a model observer with the head and body MITA CT IQ Phantoms (CT191, CT189 The Phantom Laboratory). DLIR and ASiR-V reconstructions were performed using the same raw data.

<sup>3</sup> As demonstrated in a clinical evaluation consisting of 60 cases and 7 physicians, where each case was reconstructed with both DLIR and ASiR-V and evaluated by 3 of the physicians. In 99% of the reads, DLIR's image sharpness was rated the same as or better than ASiR-V's. In 90% of the reads, DLIR's noise texture was rated better than ASiR-V's. This rating was based on each individual reader's preference.

## GE Healthcare at RSNA 2020 Molecular Imaging

The system's **LightBurst Digital Detector** is redesigned to achieve greater scalability for up to 30cm axial field of view (AFOV) digital detection coverage and a 60 percent increase in noise-equivalent counting rate (NECR) to help enable a 50 percent reduction in scan time or injected dose<sup>4</sup>.

Discovery MI Gen 2 is engineered for remote patient landmarking and positioning with **AutoIN** to help reduce technologist exposure to radiation as well as enable them to practice safe distancing measures and minimize contact with potential COVID-19 patients.

The system also offers **Q.Clear** for up to 2x improvement in image quality (SNR) as well as **MotionFree** for up to 67 percent improvement in lesion volume measurements<sup>5</sup>. MotionFree represents the first-ever digital respiratory motion management solution that does not require a gating device, helping to avoid up to 11 minutes of patient setup time compared to a traditional gating device<sup>6</sup>. Instead, it seamlessly integrates with existing workflows to actively monitor respiratory motion in the background of every PET/CT procedure, reduce motion, and provide real-time respiratory analysis.

### Nuclear Medicine

GE Healthcare is also excited to showcase its **Medium Energy High Resolution and Sensitivity (MEHRS) collimator** designed for Indium-111 (<sup>111</sup>In), Lutetium-177 (<sup>177</sup>Lu) and Gallium-67 (<sup>67</sup>Ga) imaging on its cadmium zinc telluride (CZT) general-purpose SPECT/CT systems.

<sup>111</sup>In is used to image prostate as well as certain neuroendocrine cancers and estimate treatment dosimetry prior to Yttrium-90 therapy. <sup>177</sup>Lu is becoming a very promising radionuclide therapy agent which – when imaged post therapy – can help enable further therapy personalization. <sup>67</sup>Ga is used for the imaging and localization of inflammatory lesions and various malignancies including Hodgkin's disease, lymphomas, and bronchogenic carcinomas.

“With many innovative new procedures utilizing tracers like <sup>177</sup>Lu, we feel it is important that clinicians can leverage the benefits of CZT – a key component to the future of nuclear medicine,” says Erez Levy, General Manager, Nuclear Medicine, GE Healthcare. “By combining our advanced CZT technology with our new Medium Energy High Resolution and Sensitivity collimator, we are proud to further expand the NM/CT 870 CZT's capabilities, becoming the industry's first CZT-based system to image the medium energy peaks of <sup>111</sup>In and <sup>177</sup>Lu in support of today's advanced precision medicine protocols.”

In combination with GE Healthcare's **NM/CT 870 CZT** system, the Medium Energy Imaging can provide up to 2x increased sensitivity<sup>7</sup> and up to a 15 percent increase in contrast-to-noise ratio<sup>8</sup>.

Compared to traditional NaI crystals used in analog technology, CZT crystals are lighter, more compact, and pixelated, affording clinicians increased spatial and energy resolution as well as consistently reproducible quantitation.

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<sup>4</sup> Optional works in progress. 30 cm AFOV configuration not for sale. Not approved by the U.S. FDA or any other global regulator for commercial availability.

<sup>5</sup> As demonstrated in phantom testing using a typical and fast respiratory model and OSEM reconstruction. Quantitative accuracy improvements are based on SUV mean.

<sup>6</sup> Based on clinical practice at University Hospital Zurich, using 5-ring PET/CT with MotionFree and RPM. These results are for illustrative purposes only and represent specific customer experiences; actual results could vary depending on clinical practice and circumstances.

<sup>7</sup> As demonstrated in <sup>67</sup>Ga phantom testing comparison to NM 800 NaI system with MEGP collimator.

<sup>8</sup> Average CNR as demonstrated in <sup>111</sup>In phantom testing for spheres larger than 10 mm in diameter. Compared to NM 800 NaI system with MEGP collimator.

**GE Healthcare at RSNA 2020  
Molecular Imaging**

For more information on GE Healthcare's Molecular Imaging portfolio, visit the company's virtual [RSNA booth](#) or [gehealthcare.com](http://gehealthcare.com).

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