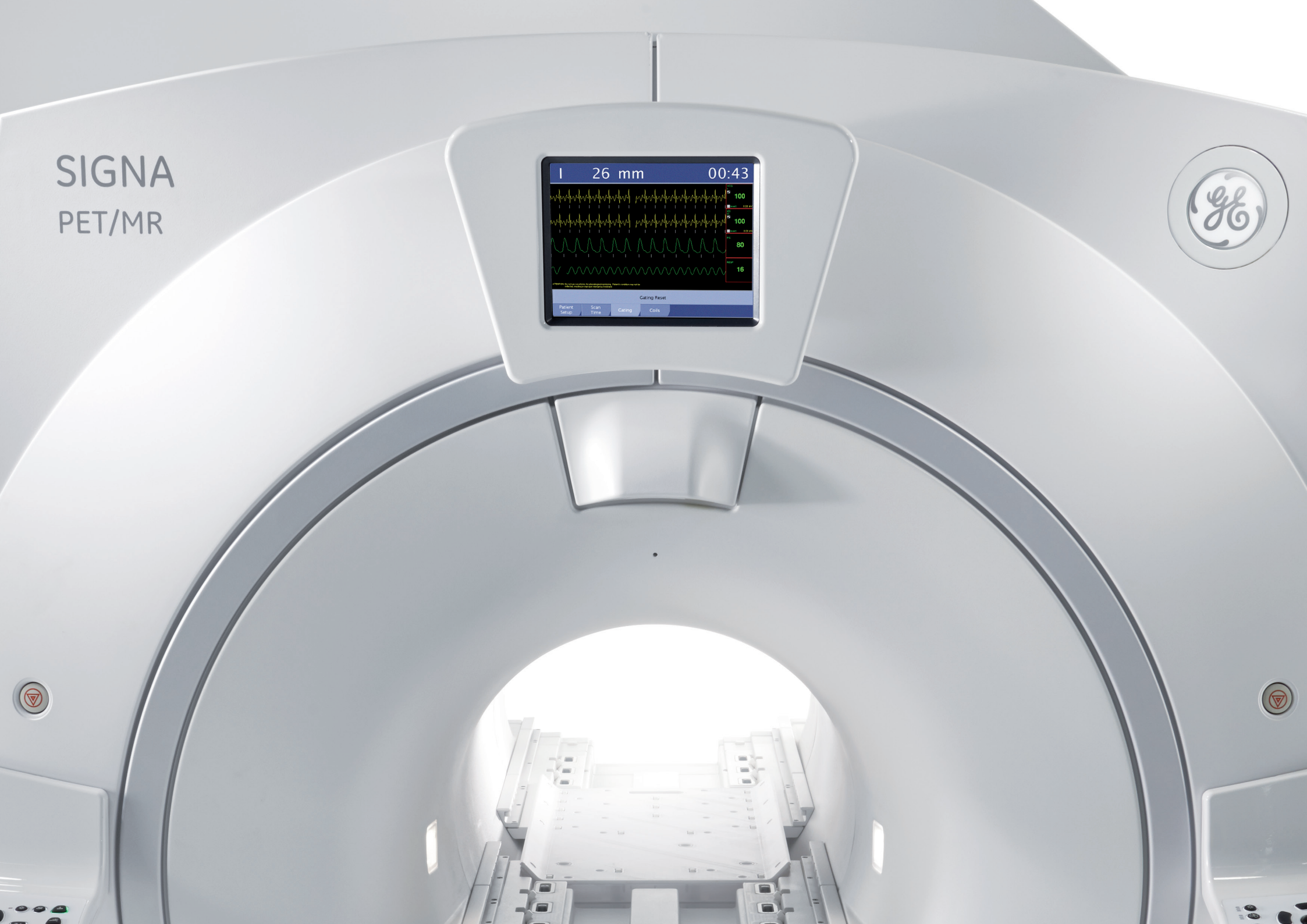
TOMORROW TODAY

SIGNA™ PET/MR with QuantWorks

Fueled by SIGNA™Works

gehealthcare.com/mr


SIGNA
PET/MR
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100
100
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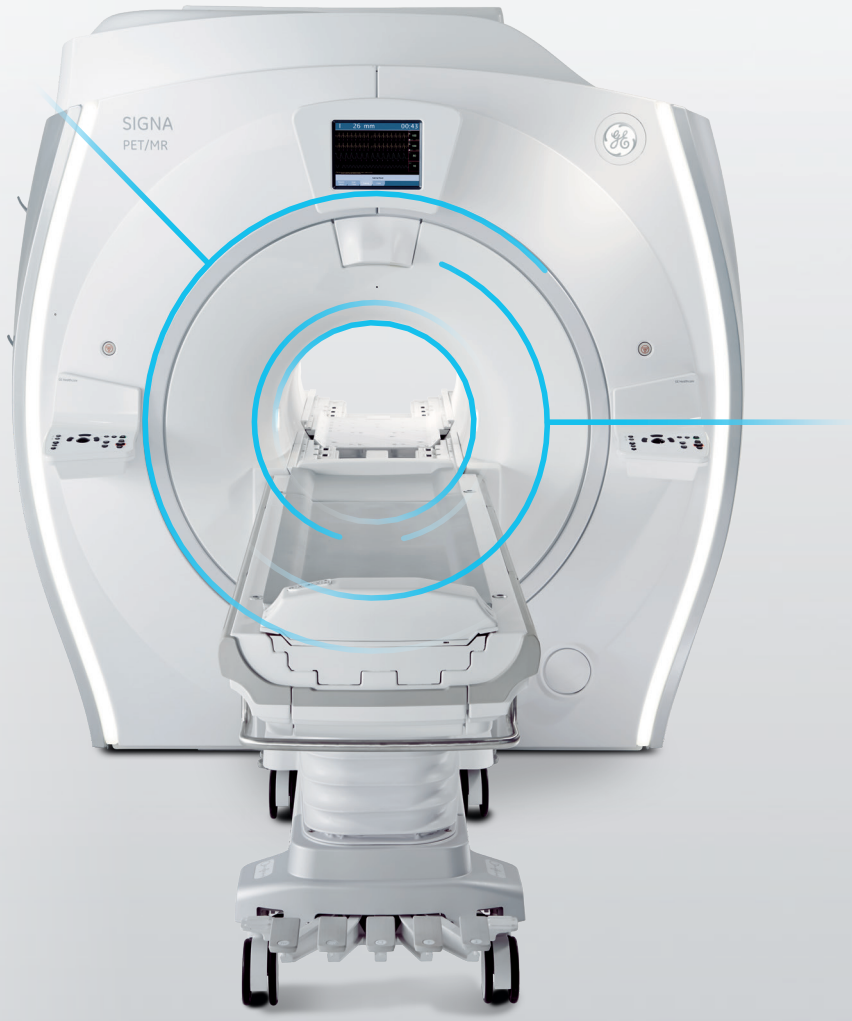
16
Gating Reset
Patient Setup
Scan Time
Gating
Coils

Embrace the full potential of PET/MR

The first generation of SIGNA™ PET/MR delivered Time-of-Flight (TOF) technology on a fully integrated PET/MR system, leading to improved PET image quality from a boosted signal-to-noise ratio (SNR).

SIGNA™ PET/MR with QuantWorks takes it even further by combining our TOF, quantitative accuracy and high sensitivity with our innovative Q.Clear reconstruction. Together, Q.Clear and TOF deliver up to 2x improvement in PET quantitation accuracy and up to 2x improvement in SNR.

To further advance diagnostic imaging, the scanner is fueled by SIGNA™Works, our comprehensive suite of advanced MR applications. With the research tools for both PET and MR readily available, this system is set to influence the future.



SIGNA
PET/MR
26 mm
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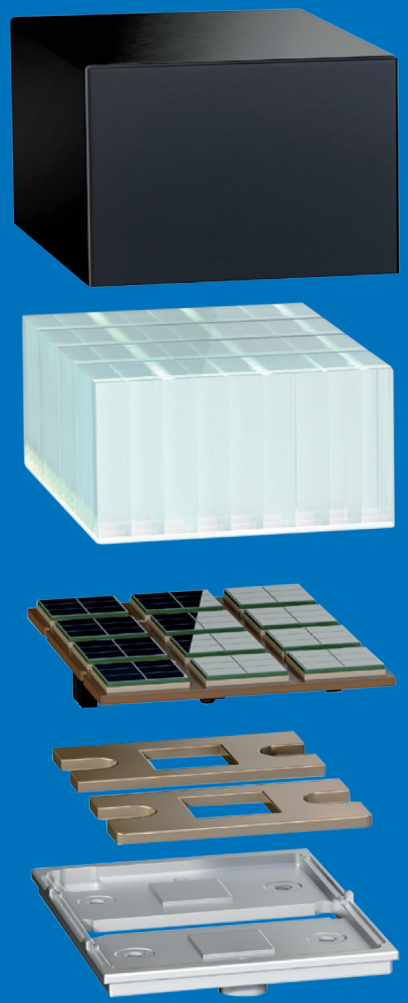


- Light-tight and radio frequency (RF)-shielded
- Lutetium-based scintillator crystal array and enhanced spectral reflectors
- Silicon PhotoMultiplier (SiPM) with circuit board/ASICS
- Thermal coupling gasket
- Mounting plate

Built for clarity

SIGNA™ PET/MR with QuantWorks delivers excellent image quality (IQ). Its MR-compatible silicon photomultiplier detectors (SiPM) are 3x more sensitive than conventional tube-based PET detectors.

Q.Clear, a GE-unique reconstruction algorithm, leverages both prior image knowledge and noise suppression to boost IQ. And, our personalized Zero Echo Time (ZTE) MR, which takes advantage of the high stability of the scanner's hardware, delivers bone visualization more reliably and faster than Ultra Short Echo (UTE) for attenuation correction in the head.

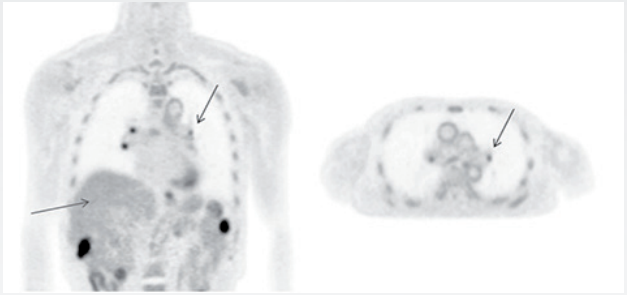
- Timing Resolution: <400 ps
- Scintillator Crystal Dimensions: 4.0 mm x 5.3 mm x 25 mm
- NEMA PET Sensitivity: 21 cps/kBq

See the difference

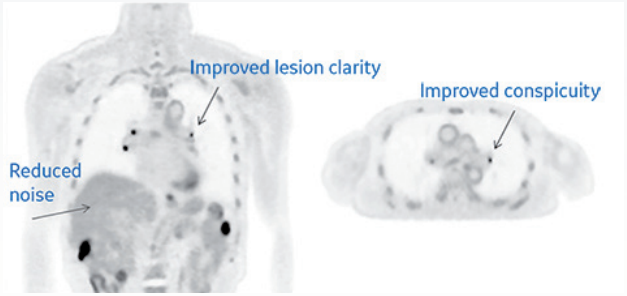
Q.Clear

Q.Clear incorporates prior knowledge about image quality into the reconstructed image to decrease noise while providing quantitation accuracy and significantly improved image quality.

SIGNA™ PET/MR with Time-of-Flight (TOF)



Same TOF scan reconstructed with Q.Clear



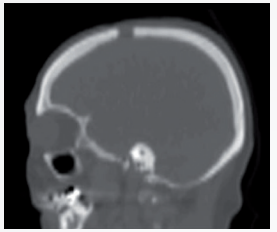
Images courtesy of Stanford University Medical School

ZTE MR

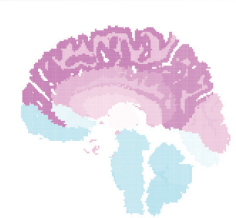
ZTE MR replaces the X-ray-based gold standard for attenuation correction with this silent, personalized ionizing-radiation-free MR technique. Based on the high stability of SIGNA PET/MR with QuantWorks' hardware, our ZTE MR is more reliable and faster than Ultra Short Echo (UTE) sequence and improves image quality.

Attenuation Correction Map

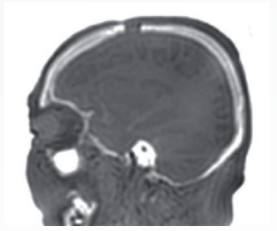
Deviation from CT Gold Standard



CT



Atlas-AC, slice = 85



ZTE MR

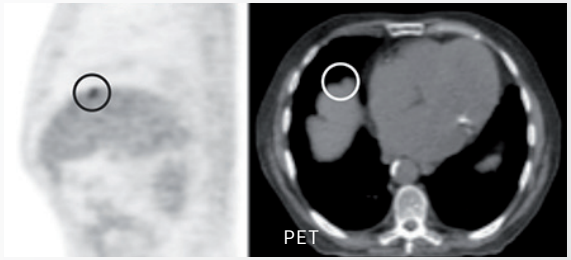
ZTE-AC, slice = 85

Images courtesy of Zurich University Hospital, UCSF, UZ Leuven

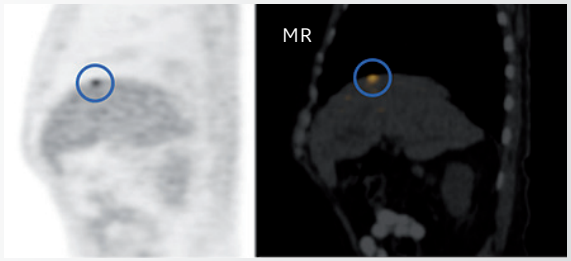
Comprehensive motion correction solutions

Solutions to reduce involuntary and physiological movement with an extensive selection of motion correction applications for PET, including Q.Static and Motion VUE, and MR, including PROPELLER, PROMO and Auto Navigator.

With Conventional Static



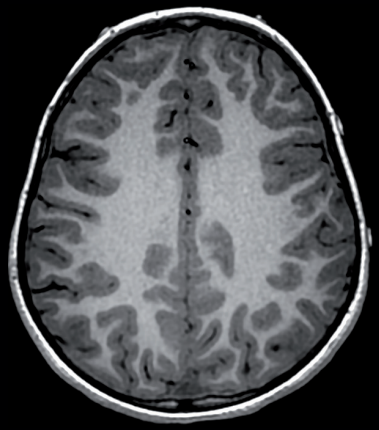
With Q.Static



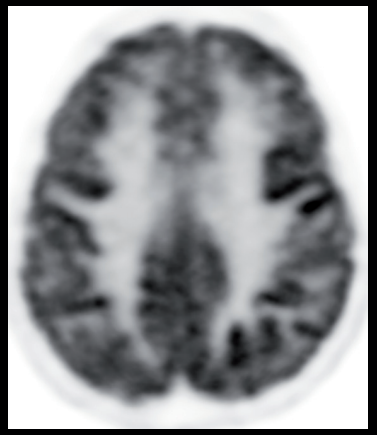
Images courtesy of University of California, San Francisco

Neurology

7 y/o, right/left temporal asymmetric uptake
Epilepsy

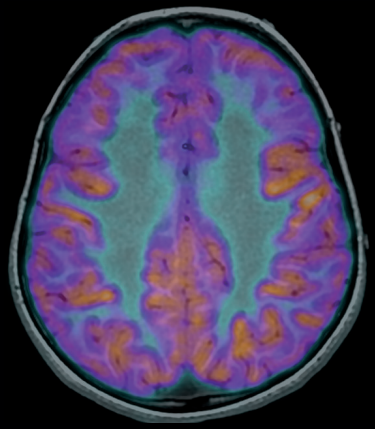


3D T1w BRAVO
4:41 min

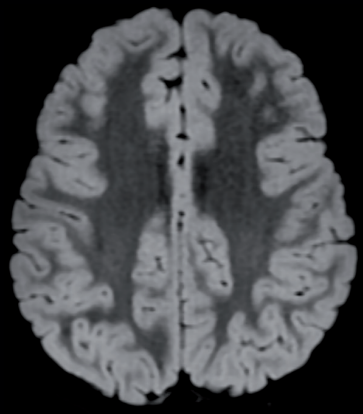


PET
^{18}F-FDG 90 MBq
scan time 30 min
uptake time 73 min

Q.Clear reconstruction
384 x 384 matrix



Fused PET / 3D
T1w BRAVO



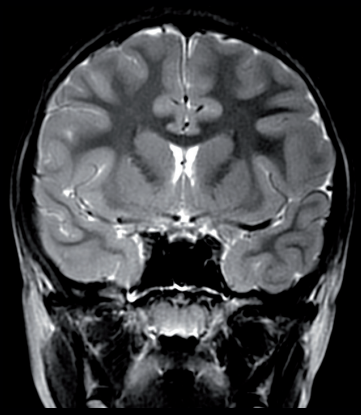
Sagittal 3D Cube FLAIR
with HyperSense and
T2 Prep reformated in axial
5:13 min

20% scan time reduction
(compared to original
acquisition without CS)

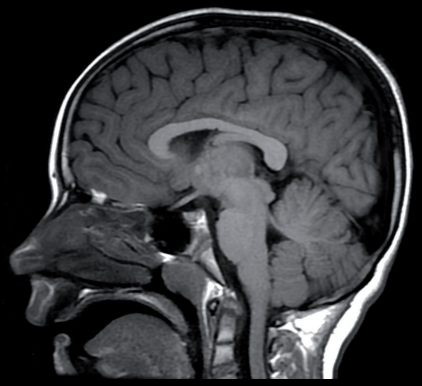
Images courtesy of University Hospital Zurich, Switzerland

Neurology

7 y/o, right/left temporal asymmetric uptake
Epilepsy

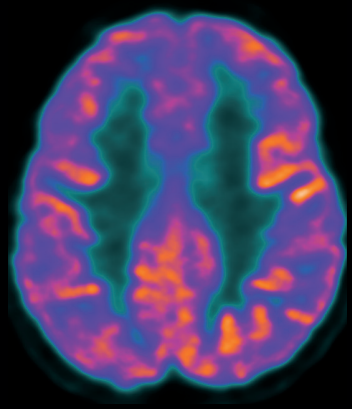


Coronal T2w PROPELLER
3:24 min



Sagittal T1w FLAIR
2:37 min

Personalized MR attenuation correction using ZTE (TE=0) acquisitions, even system components are visible

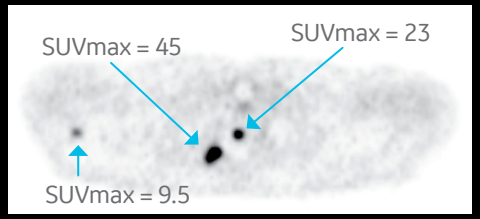


PET

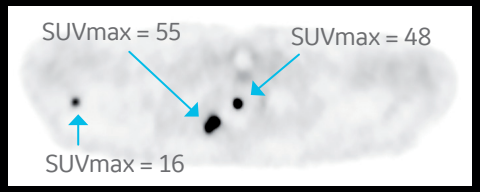
Images courtesy of University Hospital Zurich, Switzerland

Prostate

M 71 y/o, history of prostate cancer
^{68}Ga-PSMA 270 MBq
5 beds, uptake time 75 min

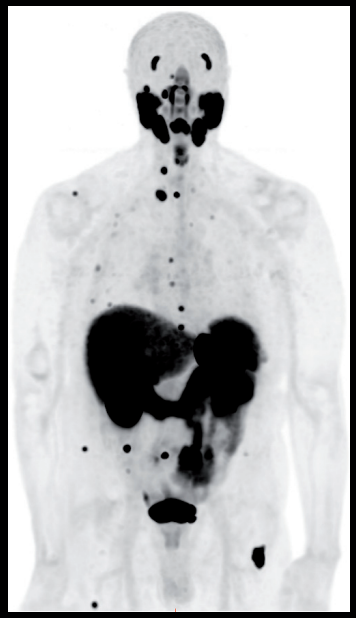


TOF without Q.Clear (28 subsets)

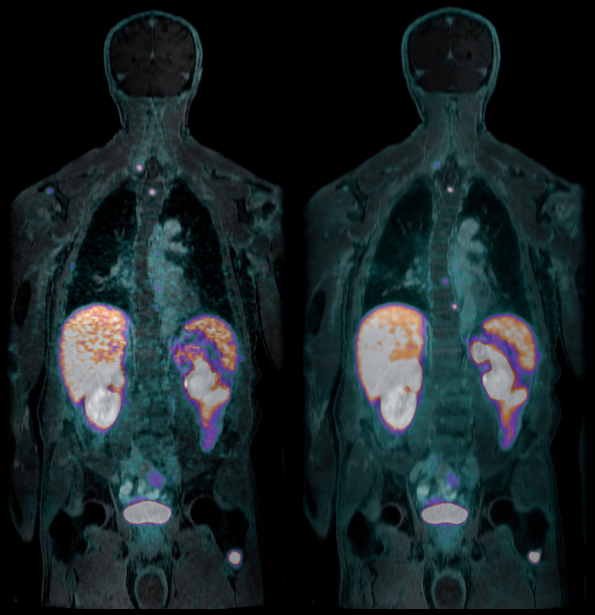


TOF with Q.Clear (28 subsets)

TOF without Q.Clear



TOF with Q.Clear

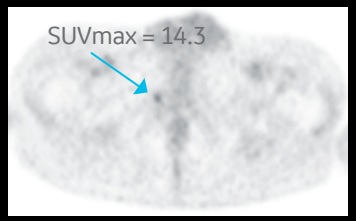


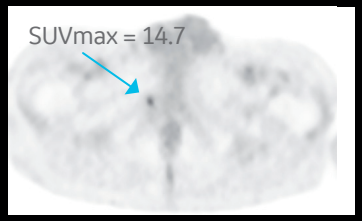
PET fused with 2 coronal slice positions
T1w LAVA Flex Water

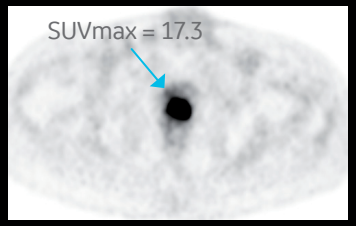
Images courtesy of Stanford Medicine

Prostate

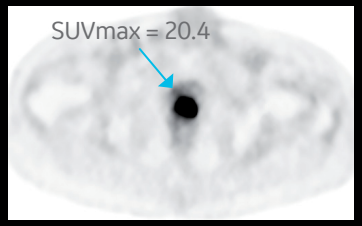
M 84 y/o, history of prostate cancer
^{68}Ga-PSMA 135.5 MBq
WB 2 min/bed, 5 beds, uptake time 62 min
Pelvis bed 15 min, uptake time 75 min







TOF without Q.Clear
(28 subsets)

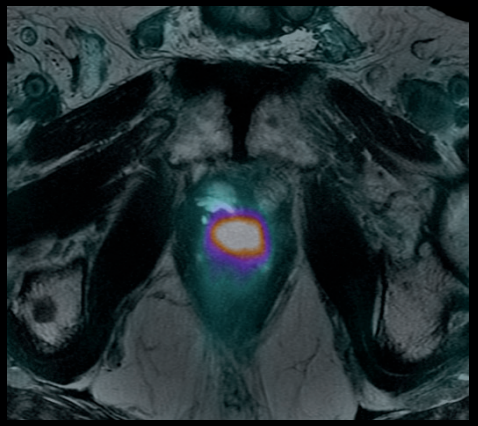


TOF with Q.Clear
Q.Clear beta 500

TOF without
Q.Clear

TOF with
Q.Clear

Axial T2w FRFSE



Fused PET with axial T2w

Images courtesy of University Hospital Zurich, Switzerland

SIGNA™ Works

The new standard is extraordinary

The extensive library of SIGNA™Works applications redefines productivity across the breadth of imaging techniques.

SIGNA™ PET/MR with QuantWorks is upgradeable so you can further customize your system by adding applications to suit your needs.

Additional applications include HyperWorks, ViosWorks, ImageWorks and SilentWorks which further accelerate throughput while simultaneously improving patient experience.

HyperWorks means hyper scanning with astonishing imaging and unsurpassed speed, delivering up to 8x faster results.

Applications

HyperSense

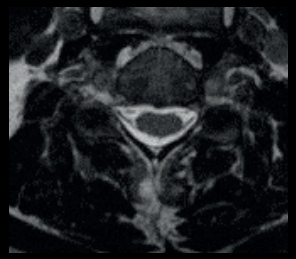
Enables faster scan times or higher resolution with an advanced compressed sensing.

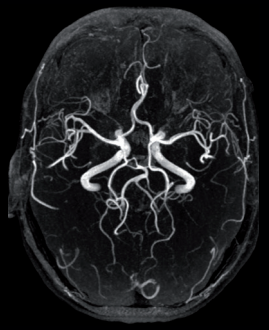
HyperBand

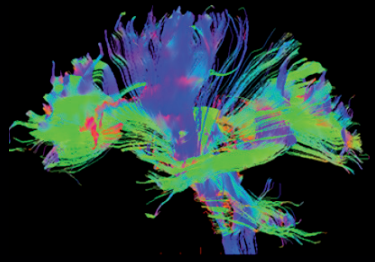
Acceleration technique that simultaneously acquires multiple slices of the brain.

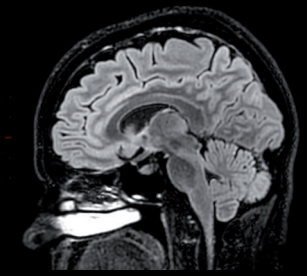
HyperCube

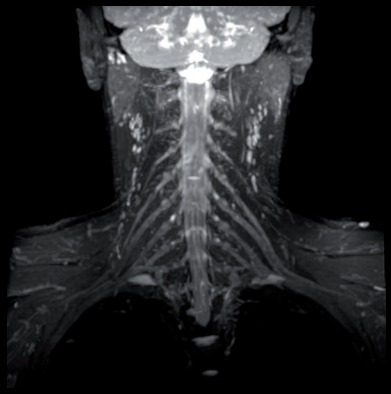
Reduces the phase field of view and minimizes artifacts to reduce scan times.

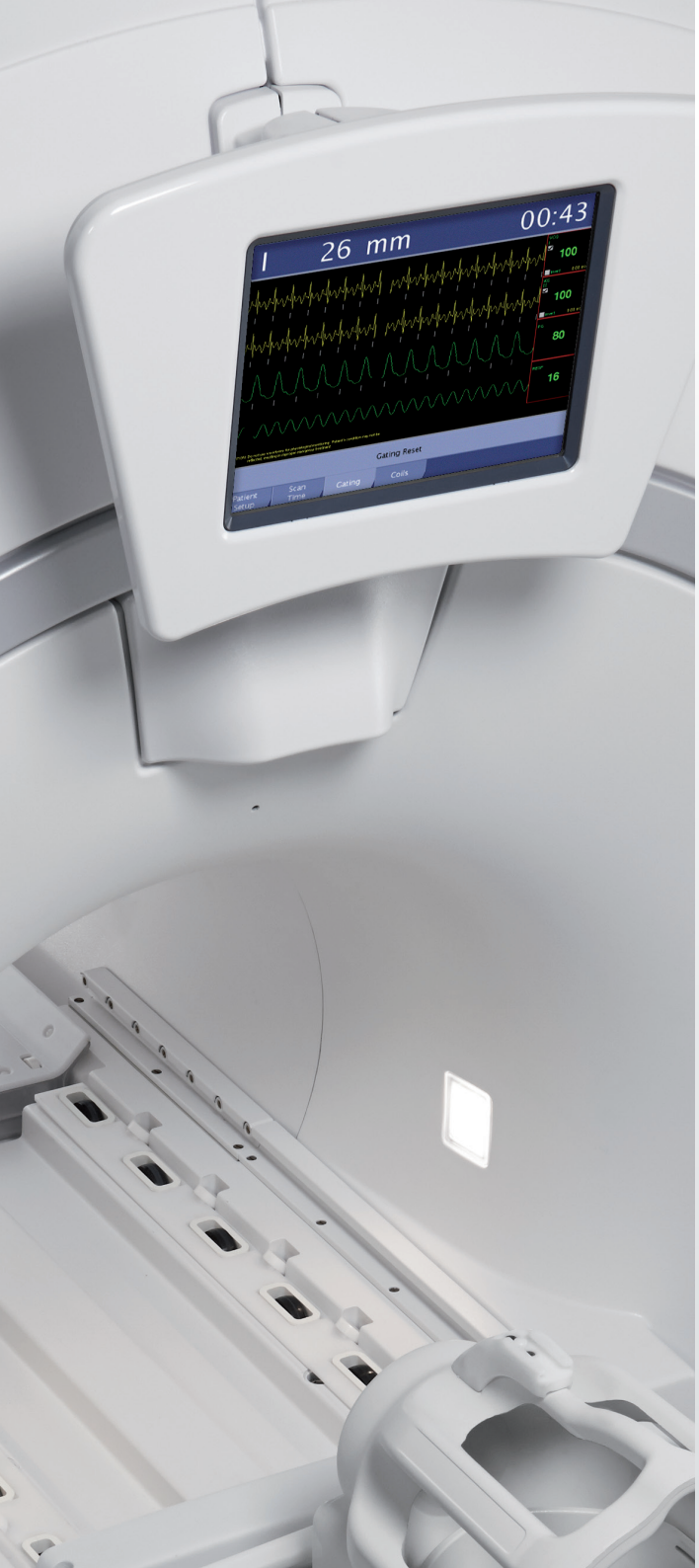






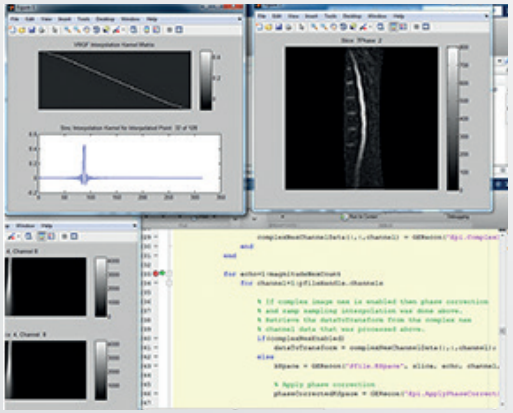






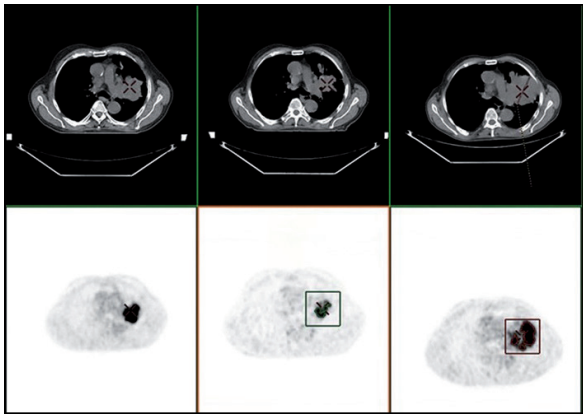
Open new avenues of discovery

SIGNA™ PET/MR with QuantWorks lets you drive investigations with an extensive offering of research tools. While some tools facilitate specific imaging, PET ToolBox and the MR Orchestra Software Development Kit give you offline access to our image reconstruction environments for PET and MR, making it faster and easier to work on your own reconstruction ideas.



Orchestra Software Development Kit

- Directly access your PET/MR image reconstruction environment offline and work with raw image data without having to be at the scanner.

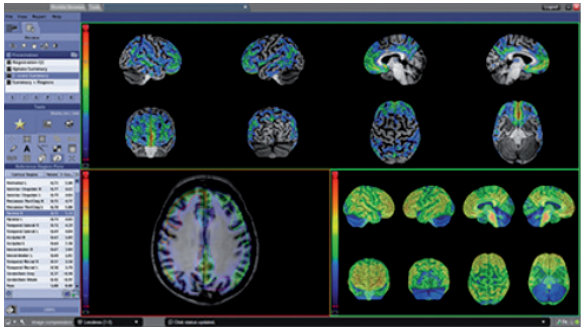


OncoQuant

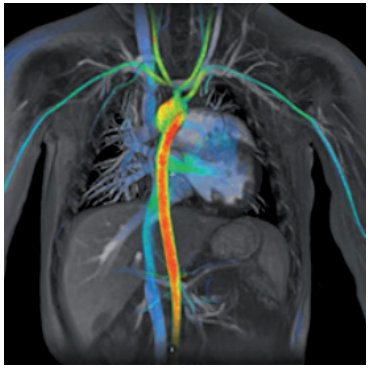
- Organize, display and review your oncology data with this Advantage Workstation (AW) tool.

PET ToolBox

- Develop novel PET imaging techniques using our software tools to access the PET image reconstruction environment.



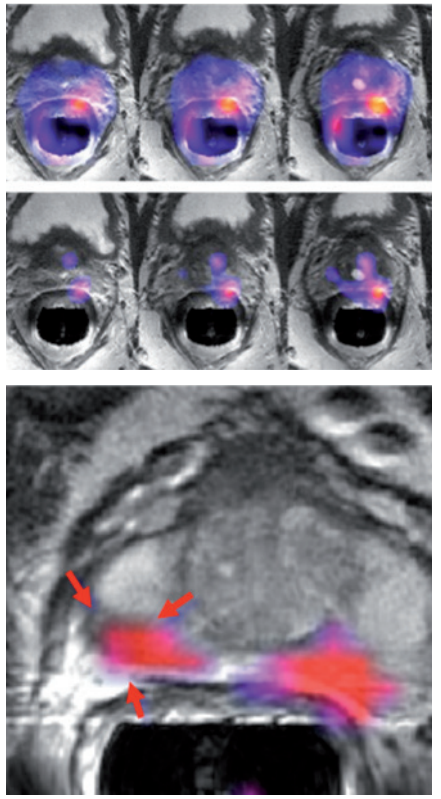
CortexID



ViosWorks

Organ-specific applications

- Analyze brain studies with beta amyloid and FDG tracers and compare them to FDG normals with **CortexID** multimodality package.
- Get quantitative 3D information for cardiac anatomy, function and flow in one free-breathing, eight-minute scan with **ViosWorks**.



Images courtesy of Stanford Medicine

In-vivo Laboratory

- Simultaneously use PET/MR with MR multinuclear spectroscopy as an *in-vivo* laboratory to study fast biochemical processes.

GE Healthcare is a leading provider of medical imaging, monitoring, biomanufacturing, and cell and gene therapy technologies.
GE Healthcare enables precision health in diagnostics, therapeutics and monitoring through intelligent devices, data analytics, applications and services. With over 100 years of experience and leadership in the healthcare industry and more than 50,000 employees globally, GE Healthcare helps healthcare providers, researchers and life sciences companies in their mission to improve outcomes for patients around the world.

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Imagination at work

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