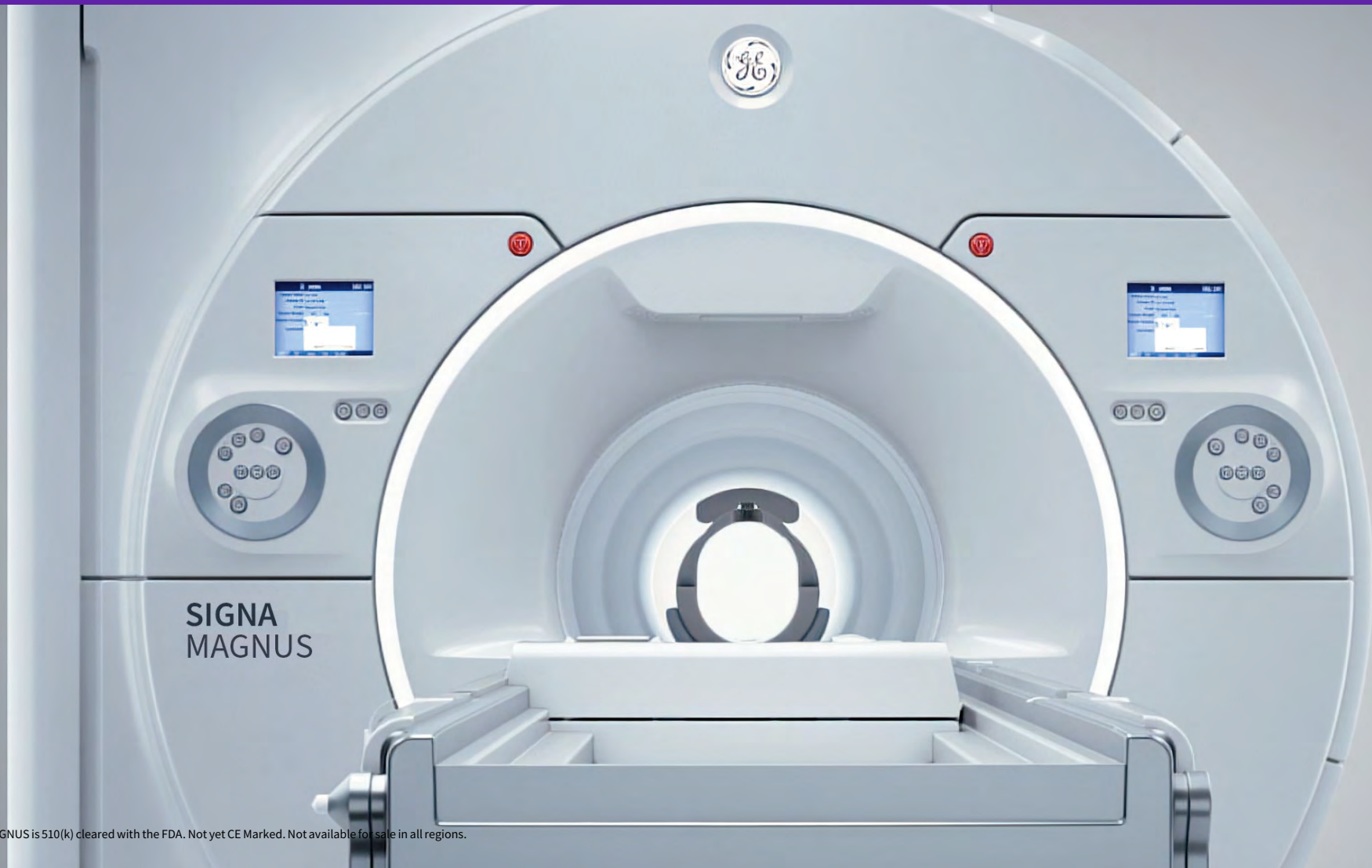


There's more to explore with
SIGNA™ MAGNUS*



A whole new world of discovery

Explore the brain in exceptionally high detail with GE HealthCare's most powerful imaging device to date: SIGNA™ MAGNUS*, our premium head-only MR scanner.



*SIGNA™ MAGNUS is 510(k) cleared with the FDA.
Not yet CE Marked. Not available for sale in all regions.



Uncover the unknown

Capture extraordinary detail with a powerful HyperG gradient (300 m T/m / 750 T/m/s) that has a higher PNS threshold due to an asymmetric coil design.

Enhanced imaging performance with HyperG leads to ultra-high anatomical resolution at a clinically relevant speed.

Ensure a sustainable upgrade offering (direct or two-step) with a mainstream high-end 3T power requirement (2MVA) giving you a faster ROI.



Select a quote to explore more

*These references are related to research on a prototype that is similar to the technology in development for commercial availability.

Evidence-based innovation*

“**Asymmetric design** allows for smaller gradient bore inner diameters (~40–45 cm) while **retaining patient access** for head imaging with the transverse gradients.”

Abad N et al. 2022



“The **ultra-strong gradients** (on the MAGNUS system) enabled the execution of what we denote a “**discovery experiment**” using the **broadest set of unique gradient waveforms** used to probe exchange in living tissue to date (150 different waveforms).”

Chakwizira A et al. 2023



“The **high gradient strength** and **high slew rate** enabled by the head-only MAGNUS gradient coil facilitate the measurement of time/frequency-dependent diffusion **beyond the capability** of conventional whole-body gradient MRI systems.”

Dai E et al. 2023



“In this study, we measure the time/frequency dependence of diffusivity with both DTI and DKI models and kurtosis in human subjects in a **high-performance**, head-only gradient system, with a **combination of b-values, oscillating frequencies, and TE** that have **not been achieved before**.”

Dai E et al. 2023b

“The **higher PNS thresholds** achieved with this head gradient coil allowed the practical use of up to 2.5X the SR of the most advanced clinical whole-body MRI system, in addition to **≥3–4X** the maximum gradient amplitude.

The MAGNUS gradient can be installed on **any** current whole-body 3.0T MRI system converting it from a general-purpose scanner to a high-performance, **dedicated “super” brain** imaging system, with the ability to accommodate a **wide range** of human subjects.”

Foo TKF et al. 2019



“At higher b-values, the increase in TE is only **nominal**, while at low b-values and V_{enc} , this increase may make imaging **impossible**. With a **stronger gradient coil**, the maximum allowed V_{enc} increases and the effect of lowering the V_{enc} for a given b-value on TE is reduced.”

Jansen IH et al. 2020



“As compared with whole-body PNS, the **shorter ramp times** from the head PNS of MAGNUS could have a **significant contribution** to reducing pulse widths; at 200 mT/m amplitude, this translates to about 1.5 msec shorter per ramp.

At the MAGNUS gradient performance and PNS thresholds, the image quality of diffusivity maps was shown to be **significantly better** than that at whole-body performance. The MAGNUS coil also had **higher slice efficiency**.”

Tan ET et al. 2020b



“The MAGNUS gradient coil has been validated to allow a **5 higher** PNS threshold for brain imaging when compared with whole-body gradient coils.

In muscles of all the subjects, the SNR of MAGNUS DWI was **significantly higher** compared with the SNR of whole-body DWI.”

Zhu A et al. 2024





Make ground-breaking discoveries

Go beyond the Connectome protocol standards with innovative technologies like ODEN, AXDI, multi-echo and laminar fMRI.[†]

Utilize advanced technologies to visualize brain function, micro-structures and micro-vasculatures in a way never seen before.

Uncover new parameters, areas of research and biomarkers.



Select a quote
to explore more

“**Striking microstructural detail** is evident even at b-values of 30 ms/μm. This is primarily due to **high-performance gradient** systems where short TE (~63 ms) and echo spacing (<500 ms) can be achieved.”

Abad N et al. 2023

“By utilizing **q-space redundancy**, we created a sequence of motion covering the full cardiac cycle from a **single scan**, while simultaneously allowing the full dataset to be used in **DTI reconstruction**.”

Jansen IH et al. 2021

“With the **ultra-high** b-value diffusion, MAGNUS can offer a **50% increase in SNR**. There are many potential applications for high gradient scanners that cannot be enabled in whole-body gradient systems, such as in visualizing **interstitial fluid flow** in the brain.”

Kohls GH et al. 2023

“This is the **first depiction** of cardiac cyclic intracerebral coherent motion using **ultra-low** V_{enc} phase contrast MRI.”

Shih RY et al. 2020

“The **high gradient amplitude, high slew rate, and high peripheral nerve stimulation thresholds** of the MAGNUS head-gradient enables OGSE acquisition for in vivo human brain imaging.”

Tan ET et al. 2020

“**High gradient amplitude, high slew rate, and high peripheral nerve stimulation threshold** are indispensable for achieving high OGSE frequencies above 30 Hz, which were met by the head-only MAGNUS MRI system.”

Zhu A et al. 2023

*These references are related to research on a prototype that is similar to the technology in development for commercial availability.

[†]Multi-echo fMRI and AXDI are technology in development that represents ongoing research and development efforts. These technologies are not products and may never become products. Not for sale. Not CE marked. Not cleared or approved by the US FDA or any other global regulator for commercial availability.



Transform our understanding

Increase your impact in neuroscience by amplifying powerful HyperG gradient performance with GE HealthCare's best DL solutions.

Stay at the forefront of scientific and AI discovery with a continuously growing portfolio of deep-learning applications.

Become part of an elite network of neuroscientists who are fueled by a passion for discovery.



Select a quote
to explore more

Three-dimensional MRI has advantages over 2D MRI, including **higher isotropic spatial resolution** achievable with **thinner slices**, and **higher signal-to-noise ratio**.

Ahn S et al. 2023



*These references are related to research on a prototype that is similar to the technology in development for commercial availability.

More to explore

High b Diffusion



b = 1,000



b = 2,000



b = 5,000



b = 7,000



b = 11,000



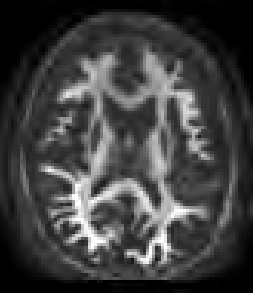
b = 13,000



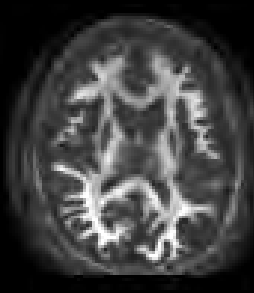
b = 16,000



b = 21,000



b = 25,000

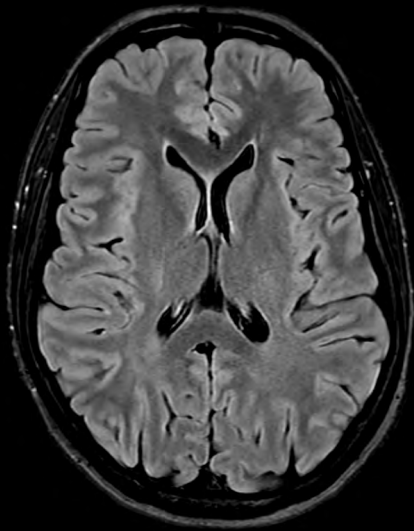


b = 30,000

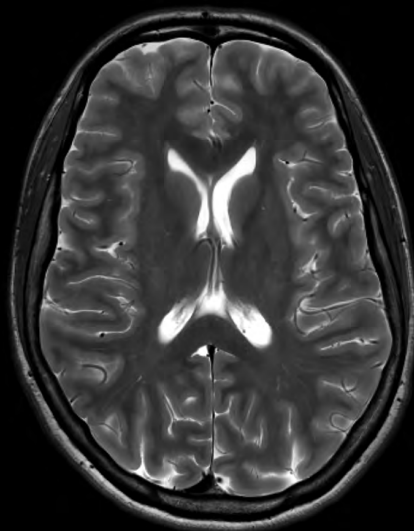
Spherically averaged 60-direction DTI
2.2 x 2.2 x 2.2 mm
TE 62.9 ms

More to explore

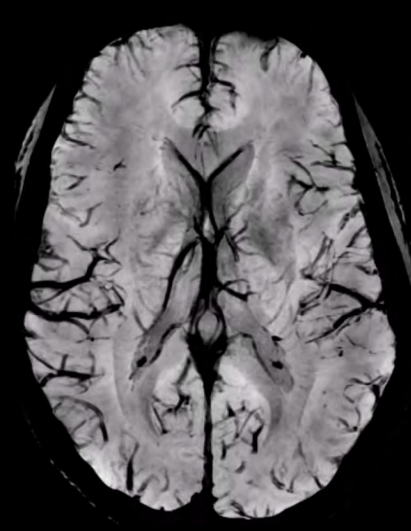
Advanced routine imaging



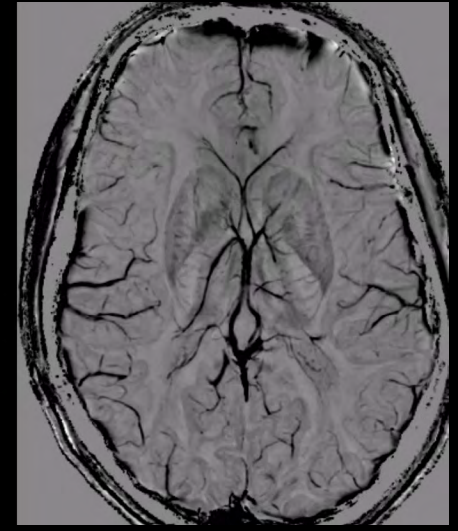
Axial T2 FLAIR FatSat
with AIR™ Recon DL
0.6 x 0.9 x 3 mm
46 slices | 3:30 min



Axial T2 PROPELLER
with AIR™ Recon DL
0.4 x 0.4 x 3 mm
46 slices | 2:51 min

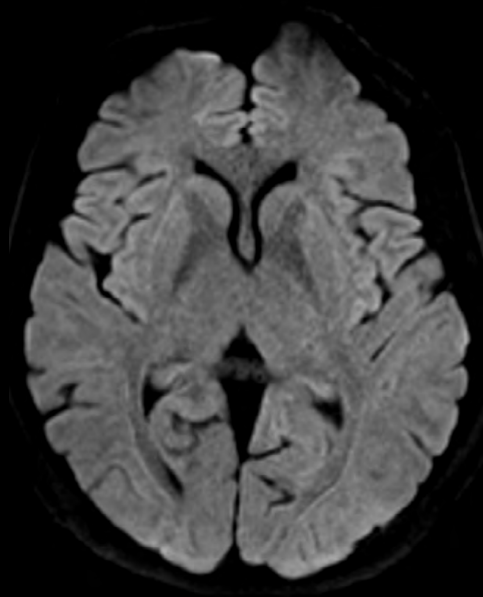


Axial SWAN + phase images
0.6 x 0.6 x 2 mm
128 slices | 3:28 min

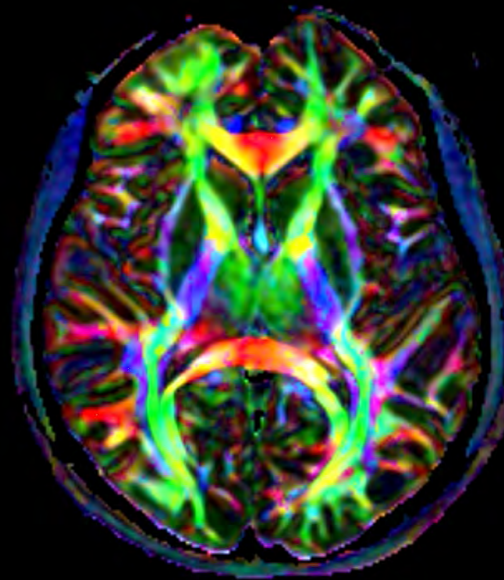


More to explore

Efficient diffusion imaging



Axial Single Shot DWI $b=1,500$
with AIR™ Recon DL
1 x 1 x 3 mm
20 seconds



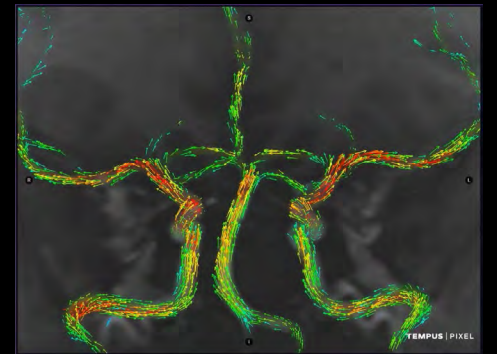
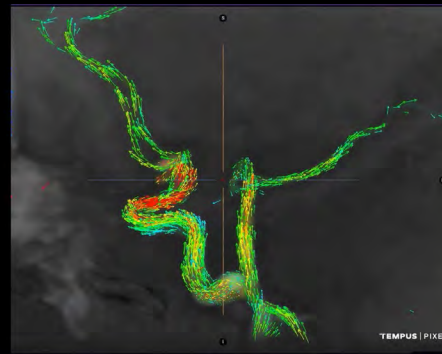
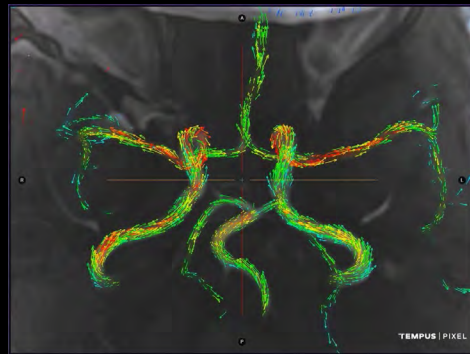
Axial Single Shot DTI $b=1,000$
with AIR™ Recon DL
2 x 2 x 2 mm
36 directions in 2:00 min

More to explore Neurovascular

Axial 3D TOF
HyperSense = 2.5, ARC = 2
0.4 x 0.4 x 0.5 mm
6:01 min



Axial 4D Flow
HyperKat = 8
 $V_{ENC} = 145 \text{ cm/sec}$
1 x 1 x 1 mm



Want to explore more about **SIGNA™ MAGNUS?**

Visit [gehealthcare.com](https://www.gehealthcare.com) or contact
your GE HealthCare representative.

3T, 3 Tesla; AI, Artificial intelligence; ARC, Autocalibrating Reconstruction for Cartesian imaging; AXDI, Axonal Diameter imaging; DKI, Diffusion kurtosis imaging; DTI, Diffusion tensor imaging; DWI, Diffusion weighted imaging; Fatsat, Fat saturation; FLAIR, Fluid attenuated inversion recovery; MR/MRI, Magnetic resonance/Magnetic resonance imaging; MVA, Multivariate analysis; ODEn, Oscillating Diffusion Encoding; OGSE, Oscillating-gradient spin-echo; PNS, Peripheral nerve stimulation; ROI, Return on investment; SNR, Signal-to-noise ratio; SR, Slew rate; SWAN, Star weighted angiography; T2, Transverse relaxation time; TE, Echo time; TOF, Time of flight angiography; V_{enc} , Velocity encoding.

GE HealthCare is a leading global medical technology, pharmaceutical diagnostics, and digital solutions innovator, dedicated to providing integrated solutions, services, and data analytics to make hospitals more efficient, clinicians more effective, therapies more precise, and patients healthier and happier. Serving patients and providers for more than 100 years, GE HealthCare is advancing personalized, connected, and compassionate care, while simplifying the patient's journey across the care pathway. Together, our Imaging, Ultrasound, Patient Care Solutions, and Pharmaceutical Diagnostics businesses help improve patient care from diagnosis, to therapy, to monitoring. We are a \$19.6 billion business with 51,000 colleagues working to create a world where healthcare has no limits.