

THE MEG SYSTEM IS A STATE-OF-THE-ART IMAGING METHOD FOR TRACKING BRAIN ACTIVITY IN BOTH TIME AND SPACE.

THE MEG
(MAGNETOENCEPHALOGRAPHY)
SCANNER

HOW DOES IT WORK

The MEG scanner works by measuring and recording the brain's magnetic fields that are created by the brain's electrical activity. The scanner detects instantaneous changes in brain activity, allowing doctors to track changes that happen in milliseconds.

THE MEG ROOM:

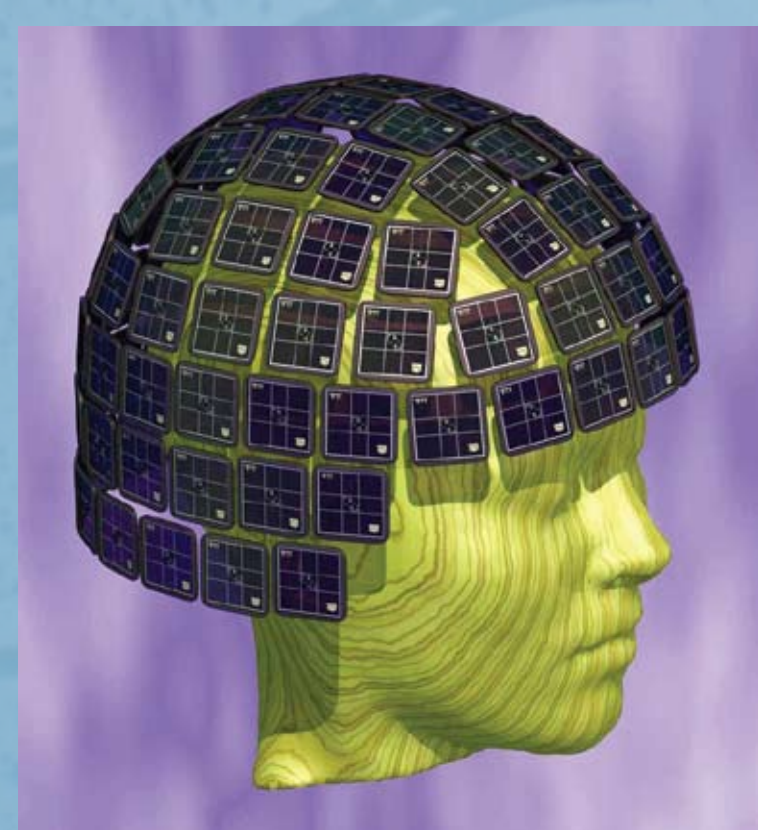
MEG recordings are done in a special shielded room (which looks like a bank vault) that blocks magnetic fields in the environment. This ensures that only the magnetic fields generated by the brain are detected by the MEG sensors. It is necessary to remove all metal and jewelry before a MEG scan and patients may not use hairspray or makeup (which may contain traces of metal) that may interfere with the scan.



THE RESULT:

A DETAILED MAP OF THE BRAIN

After the MEG scan, the MEG recordings are combined with a magnetic resonance imaging (MRI) scan, which shows the actual structure of the brain. The combined scan, called magnetic source imaging (MSI), shows areas of the brain that may be generating seizures as well as localizes areas of normal brain function with precise timing. MSI can provide neurosurgeons a detailed "map" that allows them to remove only damaged brain tissue while preserving healthy tissue.



THE HELMET:

A person sits inside a 'helmet' of 306 super-cooled sensors that measure changing patterns of the brain's magnetic activity. During the scan, the patient may be asked to perform a specific task such as tapping fingers or looking at pictures.

THE MEG SCAN:

A MEG scan of a patient reveals the person's brain centers for language, movement (motor), touch sensation (somatosensory), vision and audition (sound). This picture shows the location of individual body parts in red and a brain tumor in green.

