

THE BRIGHTMATTER™ TECHNOLOGY FOR SURGICAL PLANNING AND NAVIGATION

WHEN SURGERY IS AN OPTION

The preferred treatment for brain tumors is surgery to remove as much tumor as possible while preserving brain function. Because every patient is different, basic anatomy knowledge may limit a surgeon's ability to provide insight on potential outcomes, impacting their decision to operate. While some statistics can offer insight into the impact of surgical intervention, there is always the unknown of what exists below the surface of the brain and the white matter tracts that could be impacted.

WHITE MATTER

White matter is deep in the brain and is composed of bundles of neural pathways called fiber tracts that carry information to other parts of the brain. These fiber tracts, covered in myelin that give them their white color, are an important part of the central nervous system because they are responsible for communicating messages to other parts of the brain.

White matter pathways are responsible for someone's ability to walk, speak or see. Damage to their structure can have lasting effects long after surgery. Seeing this information can not only impact the decision to operate, but lead to preventing the potential impact a patient's quality of life for years to come.

PLANNING FOR SURGERY - THE BRIGHTMATTER PATIENT

When the neural pathways are interrupted, communication between parts of the brain can develop and cause a deficit, impairing a person's ability to perform normal activities. Visualizing white matter structures using DTI could potentially impact the clinical decision making process.



Physicians will order a head only MRI with DTI. When the patient gets out of the scanner, the software will process the information and immediately push the scan to a work station in the physician's office.



The technology will automatically process information for a view of the entire brain's white matter pathways. Physicians can plan surgery while seeing detailed information unique to the patient.



During surgery, physicians can safely navigate their surgical plan with access to the patient's imaging. They can see in real time where their tools are in the brain in relation to white matter pathways.

WHY DIFFUSION TENSOR IMAGING IS IMPORTANT

100,000
Miles of myelin
covered nerve
fibers in the brain

The challenge of acquiring DTI in the past was because there wasn't an easy or efficient way of processing this information. It usually required time of a neuro-radiologist to manually map out neural pathways in the brain.

DTI is valuable because it provides the ability to visualize white matter integrity and its micro-structural architecture in a three-dimensional space. Without insight into neural pathways, much of what is known about the brain and its architecture doesn't take into account the uniqueness of the patient.

Frontal Lobe

- Movement
- Memory
- Decision Making
- Personality

Parietal Lobe

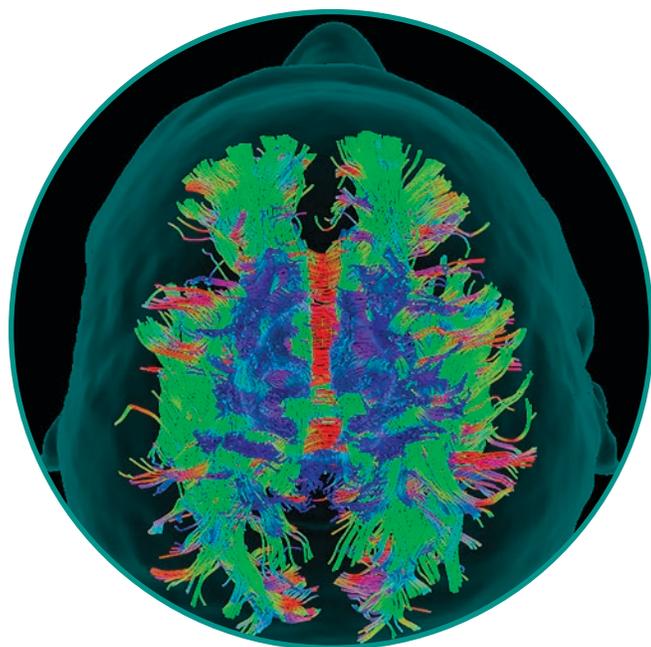
- Left from Right
- Sensations
- Reading

Temporal Lobe

- Behavior
- Hearing
- Emotions

Occipital Lobe

- Vision



Physicians have all the information at the right time: From the initial scan, planning the best and safest route, and during surgery in real time. Surgeons define what is clinically relevant throughout the entire process of care.