

# Research Study: Biomarkers of Thalamic LIFUP in Chronic Disorders of Consciousness

## What is the purpose of this study?

To date, there exists no technique for helping the recovery of consciousness in patients with severe brain injury. Recent studies have shown the potential positive effects of stimulating specific parts of the brain (e.g., the thalamus). The aim of this research is to investigate the preliminary effectiveness of a novel non-invasive method for improving consciousness recovery after severe brain injury: the Low-Intensity Focused Ultrasound Pulsation (LIFUP).

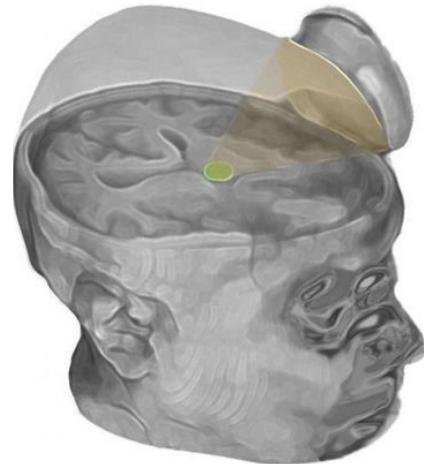
## What is involved with participation?

If your family member qualifies and is authorized to participate, they will be admitted for 10 days at Casa Colina Hospital, where they will undergo behavioral and brain measurements before and after LIFUP stimulation in order to obtain preliminary information on the effectiveness of the treatment. These measurements include:

- ◆ Behavioral measurements: Standard clinical protocols are used to assess a patient's level of consciousness. This testing will be done daily and should take around 30 minutes each time. It will consist of simple requests such as "close your eyes" and "open your mouth."
- ◆ Electroencephalography (EEG): Electrodes are put on the patient's head by trained staff to measure brain activity. This will be done on several days and should last an hour each time.
- ◆ Magnetic Resonance Imaging (MRI): This diagnostic imaging procedure takes a picture of the brain to measure activity. It will be performed once during the 10-day period at the Casa Colina Diagnostic Imaging Center and should last less than an hour.
- ◆ Positron Emission Tomography (PET) Scan: This common neuroimaging procedure measures glucose consumption in the brain to determine brain activity. This recording will be conducted on 3 occasions at Pomona Valley Hospital Medical Center and should last an hour each time.

## Who is eligible to participate?

- ◆ Diagnosis of vegetative state or minimally conscious state based on an expert assessment
- ◆ More than 3 months post-injury for non-traumatic etiologies; more than 12 months post-injury for traumatic etiologies
- ◆ Must not have history of neurological disorder (other than the brain injury); must not have dependence on ventilator
- ◆ 18 years of age or older with authorization from family member



For more information or to find out if your family member qualifies, please contact Jeanette Gumarang, RN, MSN, Research Nurse, Casa Colina Research Institute, at 909/596-7733, ext. 2283 or [jgumarang@casacolina.org](mailto:jgumarang@casacolina.org).

