

# HaGuide Brain Map: Real-Time Subthalamic Nucleus Navigation

## Introducing HaGuide: Pioneering Precision in DBS Surgery

The HaGuide Brain Map, developed in collaboration with Prof. Hagai Bergman, Prof. Zvi Israel, and their esteemed colleagues, marks a transformative advancement in deep brain stimulation (DBS) surgery.

This revolutionary algorithm, integrated into Alpha Omega's Neuro Omega and NeuroSmart MER systems, enables real-time detection, demarcation, and precise navigation of the Subthalamic Nucleus (STN) during surgery, enhancing the accuracy of DBS lead implantation.

## Unveiling the HaGuide Algorithm

The HaGuide algorithm employs microelectrode recording (MER) to pinpoint the Subthalamic Nucleus, expertly identifying its entry and exit boundaries.

Beyond this, HaGuide delves into the intricate landscape of the STN, revealing its subregions: the motor Dorsolateral Oscillatory Region (DLOR) and the non-motor Ventromedial non-oscillatory region (VMNR).

Armed with this comprehensive understanding, HaGuide guides surgeons to the optimal stimulation location, thereby optimizing therapeutic outcomes.

## Key Advantages

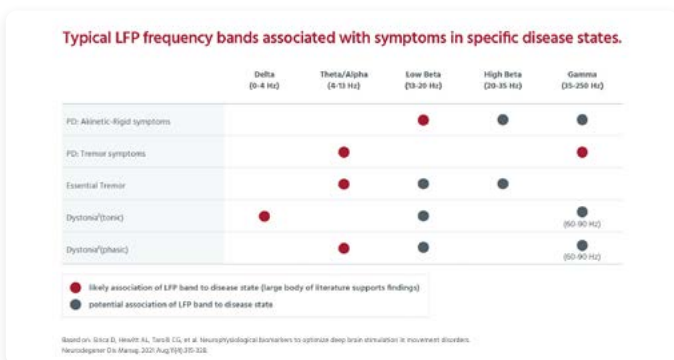
- **Targeted Stimulation Recommendations:** Leverages LFP analysis for pinpointing optimal therapeutic locations.
- **Real-time LFP Analysis:** HaGuide plots dominant frequencies at each depth along the trajectory in real time, aiding in quantifying changes and identifying dominant frequencies.
- **Precise STN Identification:** Effortlessly identifies STN entry and exit points, reducing navigation complexities.
- **Subregion Detection:** Accurately demarcates motor and non-motor subregions of the target.
- **DBS Lead Visualization:** Displays the DBS lead's placement relative to entry and exit points, of the target enhancing surgical visualization.
- **User-Friendly Interface:** Facilitates automatic driving under user control via remote control.
- HaGuide is a reliable tool most medical centers rely on for target detection and implanting decisions.
- The HaGuide works with AlphaProbe to display directional LFPs along the trajectory.

## MER + LFP Based Programming Approach

HaGuide pioneers LFP-based programming, revolutionizing DBS programming by aligning patient brain recordings with contact selection.

This personalized approach, combining disease knowledge, patient symptoms, and LFP profiles, expedites programming while tailoring it to each patient's unique needs.

By analyzing specific frequency ranges, the visualized data can assist in optimizing contact selection for maximum efficacy.



## Unlocking the HaGuide Brain Map

The HaGuide Brain Map unveils the Subthalamic Nucleus like never before, providing surgeons with a visual representation of dominant LFP frequencies via the HaGuide plot.

This color-coded map showcases high activity regions, aiding in accurate target identification. Combining this with the Motor and non-motor subregion depiction and DBS lead visualization, surgeons gain unparalleled insights for precise placement.

## DBS Lead Electrophysiology Unveiled

Post-implantation, HaGuide continues to empower surgeons. Recorded LFPs from the implanted DBS lead are graphed for monopolar and bipolar configurations, facilitating in-depth analysis. These visualizations are accessible on Alpha Omega's cloud-based platform,  $\alpha$ Care, enabling remote viewing, manipulation, and detailed examination of signal values.

Incorporating cutting-edge technology and expert insights, HaGuide Brain Map redefines the landscape of DBS surgery, elevating precision, and efficacy to new heights. Embrace the future of neurosurgical navigation with HaGuide.

## Features at a Glance

- Analyze up to 5 NeuroProbes simultaneously
- Compatible with AlphaProbe directional microelectrode
- Real-time RMS and PSD graphs for LFP analysis
- Accurate entry and exit point identification
- Motor and non-motor subregion depiction for precision
- Stimulation recommendation for optimal therapy
- Seamless integration with remote control for automatic driving
- Electrophysiological data and notes summary available on  $\alpha$ Care

## Unlock the Power of HaGuide Brain Map – Your Gateway to Enhanced DBS Surgery

For more information

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