

Rebecca Roth

Liss/Reid Award

Ph.D. Student, Neuroscience

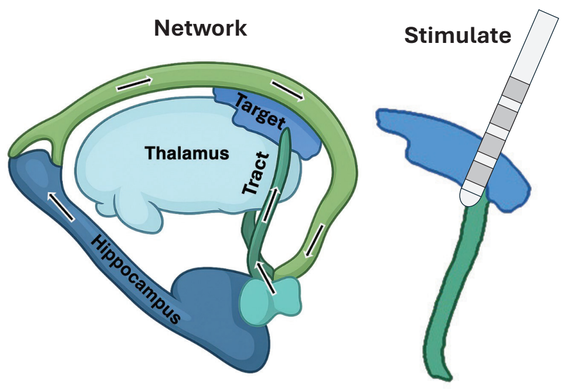
First Year ARCS Scholar

EMORY UNIVERSITY

Improving Brain Stimulation for Epilepsy

One in three people with epilepsy keep having seizures despite medication. My research focuses on how we can use brain stimulation to control seizures through both images of and signals from the brain.

Brain stimulation targets the seizure network



- For one in three patients, medication does not control seizures
- Deep brain stimulation (DBS) is a surgical device to treat epilepsy
- Works well for half of patients

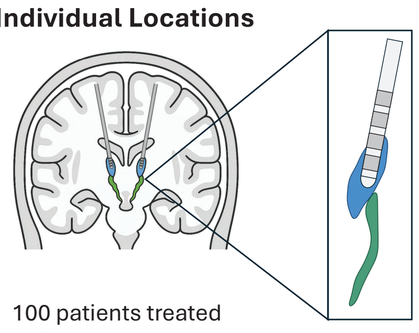
Research Gaps & Aims

Where should stimulation go?

Who will respond?

Process

Individual Locations



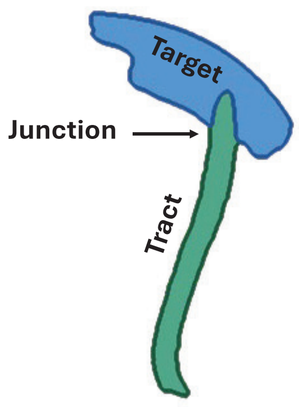
100 patients treated at Emory (the where)

Brain Rhythms

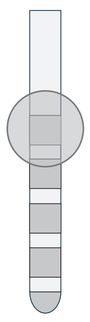


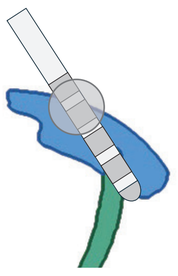
50 devices record (the what)

Where should we stimulate?

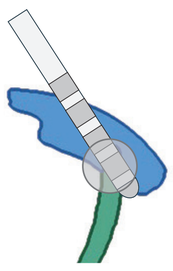


Stimulation





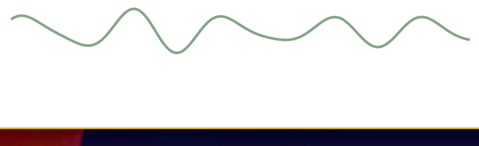
Hypothesized Poor Response



Hypothesized Good Response

Who will it help?

- Devices can also record brain rhythms in real time
- A stronger rhythm before treatment may predict who will respond



Strong Rhythm → Hypothesized Good Response

Strong Rhythm → Hypothesized Poor Response

What does this change?

- Guidelines where to stimulate (no new surgery)
- An early signal for who will respond
- Reduces trial and error for patients

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