

**MICROELECTRODE ARRAYS FOR CLINICAL MAPPING:
CONSIDERATIONS AND BRAIN RECORDINGS WITH 1024 CHANNEL
ARRAYS**

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Abstract

Clinical mapping of the human brain and spinal cord is routinely used for recording functional and pathological electrophysiological activity to determine resection boundaries of diseased tissue, as well as for therapeutic applications and brain-machine interfaces. Using microelectrode arrays, we've determined that the boundaries of the human cortical functional units extend over a few hundred micrometers, underscoring the need for a new generation of contacts that can provide mapping at high spatiotemporal resolution without compromising the recording fidelity. This talk will discuss the manufacture and the electrochemical considerations for the development of a scalable neurotechnology that is capable of high fidelity recording and stimulation of electrophysiological activity in the spinal cord and brain across species and in humans. We will present the first recordings with a 1024 ch array from the human brain and discuss future directions.