NOTE: All systems and components should be considered as Investigational-use only in the context of the NIH BRAIN Initiative. Protocol support is subject to NeuroNexus and Greatbatch approval.

Clinical investigators are advised to contact Daryl Kipke, PhD at NeuroNexus for updated information on NeuroNexus BRAIN platform system (dkipke@neuronexus.com 734-913-8858)

Exhibit C -- NEURONEXUS MATERIALS

NeuroNexus (http://neuronexus.com develops and commercializes high-value neural interface technology, components, and systems for neuroscience and clinical applications. NeuroNexus is subsidiary of Greatbatch, Inc., a large publicly traded medical device and manufacturing company.

As part of the NIH BRAIN program, NeuroNexus will provide an advanced neural interfacing platform system that includes both electrodes and systems for neurostimulation and neural recording. The NeuroNexus BRAIN platform system is based on established, well-validated devices, components and technologies that are either currently available or under active development by NeuroNexus and Greatbatch, the parent corporation of NeuroNexus.

The NeuroNexus BRAIN platform is powerful, flexible, and can be readily configured to meet particular requirements over a broad range of exploratory clinical studies. The platform includes both sophisticated conventional neurostimulation leads and innovative high-definition electrode arrays that can be purpose-designed to interface with particular neural targets. Custom-designed hybrid electrode configurations that combine these two electrode types are also possible. These electrode offerings span a diverse range of neural interface requirements making them suitable for targeting neural structures throughout the brain and spinal cord, including epidural, subdural, and penetrating locations with to 12 precisely located electrode contacts. The BRAIN platform leads and electrodes are summarized in Table 1.

The NeuroNexus BRAIN platform also includes high-performance systems for both neurostimulation and neural recording. The neurostimulation system provides u to 24 channels of independent, current-controlled stimulation. The system is highly programmable and provides arbitrary waveforms over wide range of currents and frequencies. The neural recording system provides up to 25 channels of high-precision neural recordings, including EEG, evoked potentials, local field potentials, and neuronal spike recordings. Both systems are external for bedside and/or portable use. The systems are compatible with externalized leads and electrodes of the BRAIN platform. The systems can be synchronized for exploratory clinical studies that require both stimulation and recording.

Table 3 highlights several reference designs of electrodes that can be used to target surface, shallow, and deep neural structures in the brain and spinal cord. NeuroNexus expects to work closely with clinical investigators to identify project-specific device requirements and provide appropriately configured devices.

NeuroNexus should be contacted for updated information on the availability and development status of its BRAIN platform system components.

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Table 1. Summary of Electrodes/Leads in the NeuroNexus BRAIN platform.

	Conventional neurostimulation leads	**High-definition electrode arrays**

Indications per directions for use	Epidural spinal cord stimulation	Broad usage for recording and stimulation in brain and spinal cord
		
		• Multi-site neural recording
		• Multi-site macro- and micro-stimulation
		• Spinal cord targets
		  ○ Epidural and subdural surface;
		  ○ Penetrating microelectrodes
		• Brain targets
		  ○ Epidural and subdural surface
		  ○ Penetrating intra-cortical
		  ○ Penetrating deep brain

Summary specifications	• 8- and 12-contact leads • Percutaneous types • Surgical/paddle types • Standard connectors for implantable and externalized usages. • Plug-and-play compatible with NeuroNexus BRAIN stimulation and recording systems	• Custom, application specific designs available • Modular configurations • 1 to 128 channels • Stimulation -- macro and micro-stimulation • Recording – EEG, evoked potentials, local field potentials, spikes • Standard connectors for externalized usages • Plug-and-play compatible with NeuroNexus BRAIN stimulation and recording systems
Regulatory status	CE mark, FDA: In process	In process
Development status	Standard versions available, Advanced versions in development	In development
Pre-clinical safety data status	Yes	Yes

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Table 2. Summary of neurostimulation and neural recording systems of the NeuroNexus BRAIN platform.

	Neurostimulation system	**Neural recording system**
Indications per directions for use	Epidural spinal cord stimulation	General purpose – EEG, evoked potentials, local field potentials, spiking activity
Summary specifications	• 2 channels • Independent current-controlled • Fully programmable • Broad parameter ranges (frequency, amplitude) • Arbitrary waveforms • External package (wireless, rechargeable) • Implantable package, with limitations and restrictions • Sophisticated clinical programmer and user interface	• Up to 256 channels • High-fidelity and high-bandwidth recording of fields and spikes • External system • Portable, wearable package • Flexible online signal analysis options • Offline data analysis and visualization • Sophisticated user interface • Advanced options for miniaturization
Regulatory status	In process	In process
Development status	Standard versions available, Advanced versions in development	In development
Pre-clinical safety data available	Yes	Yes

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Table 3. Illustrative reference designs of select electrode arrays in the NeuroNexus BRAIN platform.

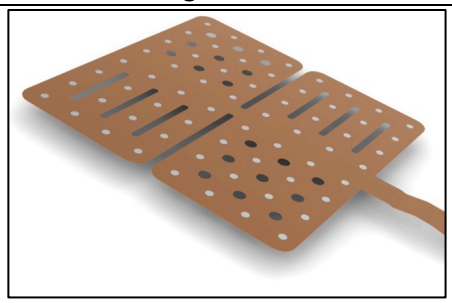
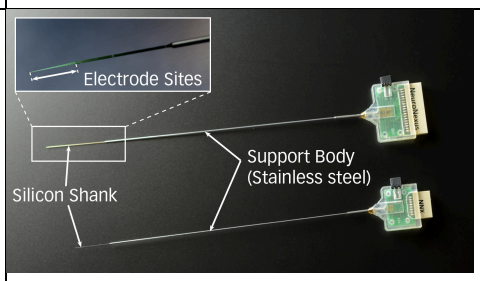
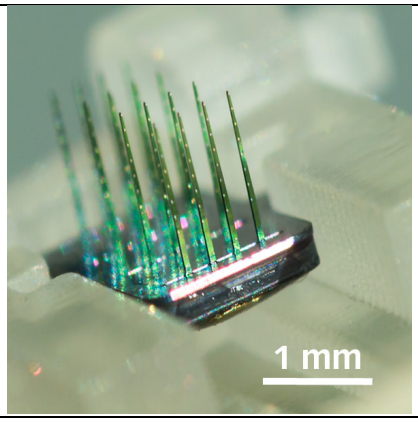
Neural targets	Reference design	Description
Brain surface Spinal cord surface (sub-dural or epidural)		**High-definition (HD) grid array for neural mapping (clinical version)** This thin, highly conformal electrode platform is based o 64-channel "module" that can be custom-designed for target-specific site layouts. Substrate slots can be designed for increased mechanical flexibility and fluid management
Deep brain structures		**Vector electrode (clinical version)** This electrode platform provides a high-quality microelectrode array packaged to provide precise access to deep brain structures for recording and/or stimulation.
Intra-cortical structures Intra-spinal structures		**Matrix electrode (clinical version)** This electrode platform provides 3D microelectrode array technology for neural recording and stimulation from cortical or shallow structures. The 3D electrode site layout can be purpose-designed for targeting specific neural structures.

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Exhibit D -- NEURONEXUS SUPPORT

NeuroNexus will be available to provide full technical support to its research collaborators through all stages of the project, from project inception and proposal preparation through the clinical studies. The NeuroNexus team has extensive R&D and scientific experience, including NIH projects.

The NeuroNexus support may include

- Custom design services
- Technical support and consulting o engineering and scientific components of the study
- Participation in research publications
- Intellectual property strategy and preparation
- Commercial partnering and translational strategy