Plan Overview

A Data Management Plan created using DMPTool

DMP ID: https://doi.org/10.48321/D1T34Z

Title: Spreading depolarizations initiated by hypoxic-ischemic injury signal risk for brain death

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Project abstract:

Decreases in brain oxygenation and blood flow during cardiac arrest or stroke cause a hypoxic-ischemic injury to the brain, which initiates a wave of self-propagating neural activation called a terminal spreading depolarization. These terminal spreading depolarizations are thought to contribute to physical and electrochemical changes in the brain that result in brain death. Experiments in this proposal will investigate the role of using clinically translatable technology for early detection of terminal spreading depolarizations in ischemic brain injury, and test the ability of ketamine to prevent hypoxic-ischemic induced terminal spreading depolarizations.

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Spreading depolarizations initiated by hypoxic-ischemic injury signal risk for brain death

In this proposed project, data will be generated via the following methods: Fluorescence and reflected light microscopy, Immunohistochemistry. This data will be collected from a minimum of 10 independent experiments, with each independent experiment consisting of 6 groups. The total size of the data collected is projected to be 3 TB.

We expect to generate the following data file types and formats during this project: Nikon elements image files (.ND2), Immunohistochemistry photographs (.TIFF), and tabular data (.xlsx).

Raw data files will be analyzed to generate tabular data files containing density of immunohistochemical markers, brain regions where markers are localized, and microscope intensity data at 3 different wavelengths over time for statistical analysis.

All data produced in the course of the project will be preserved and shared.

To facilitate the interpretation of the data, metadata, protocols, and data collection instruments will be shared and associated with the relevant datasets. The protocol, data dictionary, and codebook will be accessible in data repositories where data are shared

An additional file, including software programs, will be provided alongside the raw datasets being shared. Any non-standard abbreviations or indicators will be clearly defined in a data dictionary as needed and provided with the datasets being shared.

Data on all study animals (DOB, pedigree, genotype, sex and vivarium housing conditions) is stored using mLIMS Transgenic Mouse Colony Management software. All animals receive a unique identifier code which is carried through to lab notebooks and computer databases (Excel, Sigma Plot, Graphpad Prism) to track all experimental procedures and data.

Confocal image data is captured using Nikon software and is stored as .ND2 files. Raw data will be arranged into Microsoft Excel, Sigma Plot, and Graphpad Prism for data collection, statistical analyses and graphing. These tools are fee-based, proprietary software.

No consensus data standards exist for the scientific data and metadata to be generated, preserved, and shared.

All datasets that can be shared will be deposited in the Mendeley Data Repository. Data will be shared upon publication.

The Mendeley Data Repository provides searchable study-level metadata for dataset discovery. Mendeley assigns DOIs as persistent identifiers, and has a robust preservation plan to ensure long-term access. Data will be discoverable online through standard web search of the study-level metadata as well as the persistent pointer from the DOI to the dataset. Upon publication, data will be made available, unless specific data is recognized as proprietary and requires a data sharing agreement.

Data will be made available within 24 months of the initial award for available data or at the time of associated publication, whichever comes first. The final data will be made available no later than a year after the end of the grant award.

All data will be retained indefinitely to maintain access for any future use by internal or external parties. Data will

be uploaded to the Mendeley Data Repository prior to or at the time of submission for publication. Only in the instances in which data is determined to be proprietary will a data-sharing agreement be required. We will follow NIH guidelines on data sharing in conjunction with our institutional guidelines.

Controlled access will not be used. The data that is shared will be shared by unrestricted download.

No scientific data derived from humans will be produced from this study.

Data will be owned by CCHMC and adhere to any copyright or IP rights designated by our institution. Data sharing will comply with standards set forth by the NIH and will be made available upon publication at a designated repository.

Data is stored on a secure server in at least two separate locations to ensure data can be recovered in the event of an incident. Data stored on the secured servers prior to publication are password protected and will be managed by the information services division at CCHMC in addition to the laboratory. Collaborators are all in-house and will not require additional access outside our standard procedures at CCHMC.

The PIs of the study will be responsible for implementing the DMP and ensuring it is reviewed and revised as needed. Mendeley Data Repository is a free site for managing and sharing data. We will use this alongside support from our IS division, which has expertise in DMPs.
