**Data Management and Sharing Plan**

**Element 1: Data Type**

1. **Types and amount of scientific data expected to be generated in the proposal:**

This R01 will produce raw data files of physiological animal biometric data, whole body, hemodynamic data from experimental animal ultrasounds, imaging data, and biochemical data. Individual data will be made available for sharing within the group prior to publication and wider dissemination.

This project will produce raw data files of echocardiographic images collected on a Vevo echocardiography imaging system from live mice experiments.  We will generate 212 data sets per year of approximately 100 MB each, totaling approximately 21,000 MB of data per year for 5 years. Raw data will be transformed by Vevo Lab imaging software and the subsequent data used for statistical analysis. These data will be maintained by the PI and staff.

Data entry of uncut gels from immunoblot assays as raw data in TIFF or JPEG format ready for direct image density analysis using standard image analysis software or Image J software. Final form data of numerical spreadsheets in Excel or TXT format generated by UV spectrometer, PCR machine and fluorometer readouts of approximately 1000 data set per year at approximately 60 MB per year for 5 years. Subsequent data will be used for statistical analysis. Individual data will be made available for sharing.

Flow cytometry data will be collected in PCS format ready for direct analysis using standard Flowjo software. Final form data of numerical spreadsheets in Excel will be readouts of approximately 1000 data set per year at approximately 60 MB per year for 5 years. Subsequent data will be used for statistical analysis. Individual data will be made available for sharing.

1. **Scientific data that will be preserved and shared, and the rationale for doing so:**

Scientific data will be preserved and shared publicly upon publication. The types of data that are described above will be collected from animal experiments. These include biochemical assay data and physiological data from animals and humans, in addition to data types described above. Based upon ethical, legal, technical, and professional standards, at the time of publication all published data that are produced in the course of the project will be preserved and shared via Dataverse or a similar online public repository. The rationale is to share data for public access for other scientific learning and informational purposes to advance the knowledge base in these fields, and to help researchers to profit from secondary analysis on our broad range of datasets.

1. **Metadata, other relevant data, and associated documentation:**

To facilitate interpretation of the data, metadata and documentation of data source (i.e. sample preparation) will be shared associated with the relevant data sets. When appropriate, protocols and details regarding instrument settings, data transformation and analysis will be made available in an accompanying PDF or rtf format document.

**Element 2: Related Tools, Software and/or Code:**

Echocardiographic data from animals will be made available in VXML file format that require the use of specialized software tools, such as Vevo Lab software that is available from the vendor Visual Sonics for data to be accessed and manipulated.

Immunoblot data files will be made available in JPEG or TIFF format that does not require the use of specialized software tools other than free image density analysis software such as NIH image of Image J to be accessed and manipulated.

Flow cytometry will be made available in PCD format and flowjo files including analyses.

Tools for all of the data described above are shared openly by the vendor, and the metadata for data documentation, as describe in the preceding section, will provide indications of software types for data processing and analysis.

PCR machine, and fluorometer data will be made available in Excel (xls) file format and will not require the use of specialized tools to be accessed or manipulated.

**Element 3: Standards**

Formal standards for all data have not yet been widely adopted, but our data and other materials will be structured and described according to best practices.

**Element 4: Data Preservation, Access, and Associated Timeline**

1. **Repository where scientific data and metadata will be archived:**

All data will be deposited to the Dataverse that is supported by Harvard University or a similar database under waivers providing for public availability of data repository starting 12 months after the award begins and will be deposited every six months thereafter.

1. **How scientific data will be findable and identifiable:**

The indicated repositories all provide metadata, persistent, unique identifiers and long-term access for at least 10 years or as long as the repository exists for free data storage repositories. Data will be findable for the research community under a unique study identifier through the Dataverse repository that will be established when this application is funded. All publications will also be deposited in the Dataverse repository. The study will be assigned a digital object identifier (DOI). This data DOI will be referenced in the publication to allow the research community easy access to the exact data used in the publication.

1. **When and how long the scientific data will be made available:**

Data will be made available as soon as possible or at the time of associated publication or end of the performance period and for repositories that do not incur fees is intended to be available for at least 10 years or as long as the repository last. The research community will have access to data at the end of the grant award or when a publication has been submitted. Once the data are submitted to the Dataverse repository, that archive will control the long-term persistence of the data set.

**Element 5: Access, Distribution or Reuse Considerations**

1. **Factors affecting subsequent access, distribution, or reuse of scientific data:**

No anticipated factors or limits exist for sharing of data generating by the planned research.

The authors have attempted to maximize FAIR sharing of the data to be collected from this project.

Non-clinical data will be made available through the repositories identified above.

1. **Whether access to scientific data will be controlled:**

Access to scientific data will be enabled upon publication as per NIH guidelines. To request access of the data, researchers will use the standard Dataverse processes. The only controls will be those applied by the respective repositories for as per the guidelines for authorized access by the public to maintain data safety and integrity.

1. **Protections for privacy rights and confidentiality of human research participants:**

Not applicable.

**Element 6: Oversight of Data Management and Sharing:**

The Pl will make the plan available to all personnel involved in the project. The Pl will be responsible for ensuring faithful adherence to the DMS Plan and revising the plan annually, as the research project evolves. The following individuals will be responsible for data collection, management, storage, retention, and dissemination of project data, including updating and revising the Data Management and Sharing Plan when necessary. The Principal Investigator will certify at the times of annual progress report and final report that the NIH-approved data sharing and management plan(s) has/have been followed.

Dr. Loren E. Wold, Principal Investigator, ORCID ID: 0000-0001-8155-0204, Loren.Wold@osumc.edu