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Extracellular Vesicles at the Fetal-Maternal Interface in Cattle

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DATA MANAGEMENT PLAN

Expected Data Type and Format

1) Physical data: frozen cells and RNA used for gene expression, and miRNA sequencing will be stored at -80°C freezers for long-term storage for a minimum of 5 years after publication of the results.

2) Electronic data: the main types of data will be:

a) Flow cytometry and cell sorting data will be acquired using FACS Aria II flow cytometer in a .fcs format at the Utah State University Flow Cytometry Core Facility; this data will be processed using Diva (Beckton Dickinson) and FlowJo software packages and processed data will be stored as a Microsoft Excel file.

b) Gene expression data will be acquired by the Fluidigm Real-Time PCR Analysis Software (Fluidigm) as a .csv file and will be processed by the same software. Processed data will be in the format of a Microsoft Excel file.

c) miRNA sequencing data will be acquired in a .txt format using the NextSeq Sequencer (Illumina), will be mapped and aligned, and processed using Bioconductor and R (R Core Team), and DNASTAR Lasergene (DNASTAR) software packages at the Utah State University Genomics Core Facility. Processed data (differentially expressed genes and fold changes) will be sent to the PD and co-PD in a Microsoft Excel file format.

3) All other data (laboratory notes, protocols, sample collection information) will be stored as Microsoft Word and Excel files. Paper notes such as field and laboratory notes will be typed into Microsoft Word and Excel files and will be scanned weekly and stored as an Adobe PDF file.

All statistical analysis data will be stored in Microsoft Word and Excel.

All data will be converted to .txt and .csv file formats for long term interoperability.

Data Storage and Preservation

All data, whether in electronic or paper form, will be properly named and organized by recording date. All raw, processed and analyzed electronic data will be archived in triplicate. One copy will be archived in the PD and co-PDs computer system which is backed up hourly to an external hard drive. A second copy will be kept in Box.com which is a cloud storage system used by Utah State University. Files are backed up nightly at multiple sites, and Box.com ensures data integrity, includes version control, and is password controlled, encrypted and HIPAA compliant. A third copy will be deposited and archived in a subject specific data repository and/or in Utah State University's institutional repository, Digital Commons. DigitalCommons@USU supports all the file types and formats. Files are provided with persistent URLs, and if needed, a DOI. All files are backed up at multiple sites, including cloud storage.

Physical data (paper form) will be archived on-site in the Department of Animal, Dairy and Veterinary Sciences and scanned copies will be kept in Box.com and in Utah State University's institutional repository, Digital Commons.

DATA MANAGEMENT PLAN

Raw, processed and analyzed data will be kept for a minimum of 5 years after publication.

Data Sharing and Public Access

Data to support publication will be made available at the time of article publication. After final publications associated with the grant proposal are completed any remaining data will be made available in appropriate data repositories.

We will make the results of our work available to the scientific community through timely peer-reviewed publications and professional meeting presentations. Our budget contains publication and travel funds that will cover the costs of publication and oral and poster presentations at professional venues like the Society of Study in Reproduction (SSR), American Society of Animal Science (ASAS) and American Society for Reproductive Immunology (ASRI).

Roles and Responsibilities

Drs. Rutigliano and Polejaeva (PD and co-PD) will be responsible for the implementation and monitoring of the data management plan. They will make sure all data are deposited in the appropriate sites. In case someone leaves their research group before the completion of the proposed studies, Drs. Rutigliano and Polejaeva will be responsible for collecting and verifying that all data in that person's possession is appropriately identified, stored and accessible. They will also reassign the responsibility for that data to another laboratory member.

Each student and laboratory technician will be responsible for properly naming, storing and recording their data. All data will be made available weekly at Box.com. Monthly meetings will be held to assure that data management practices are followed and data is being shared.

Monitoring and Reporting

Funded project will be subjected to this DMP and compliance will be monitored throughout the duration of the project until all data is processed and deposited. The implementation of the DMP will be reported to NIFA through REEport and will include data sharing activities such as publications, presentations to conferences, and progress on storage activities.