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Collaborative Research: Constraining the tempo and dynamics of Cambrian Earth systems in western Laurentia

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Data management plan

❖ *Data description*

The proposed facility will annually produce several thousand geochemical and geochronological data objects, as well as several hundred curated rock specimens and mineral separates. The physical samples will be permanently curated at partner universities and the Denver Museum of Natural History.

❖ *Metadata*

All metadata for geological samples, including positional, lithological, stratigraphic and paleontological information, will be captured and associated with a unique sample identifier using the standards of the International Geological Sample Name system via the SESAR website.

❖ *Quality assurance*

All geochemical and geochronological data and metadata will be acquired using published data reduction protocols and standards, including standards established by the EARTHTIME and EarthChem initiatives.

❖ *Sample curation*

The curation plan involves the following: (1) All samples will be clearly labeled using the PI's pre-existing sample numbering scheme to maintain consistency, (2) During analysis, all samples will be cut so that a portion is kept in reserve for future study; (3) the samples will be kept in a rock storage facility at each of the PI's institutions; and (4) rock samples will be registered through the System for Earth Sample Registration (SESAR), also part of IEDA, so that other researchers will be able to identify and contact me for future collaborations/use of the samples. Each sample will have a unique International Geo Sample Number (IGSN) that will be used across the project for uniformity.

The stratigraphic and paleontological samples that we propose to collect in this research will be preserved in accordance with departmental requirements of the partner universities and the Denver Museum of Natural History. Thus, decades from now, future researchers will have the ability to investigate the remaining sample material from this federally funded work.

❖ *Data archiving*

Data will be archived digitally at the partner universities and the Denver Museum of Natural History within enterprise-class servers and storage maintained by dedicated IT professional staff in their respective Departments. Where necessary, data that are recorded on paper forms and laboratory notebooks will be entered into spreadsheets and scanned for digital archiving. Field notebooks will also be scanned and digitized for archival purposes. All digital files will be collated and stored on the computers of all PIs on a monthly basis. Best practice standards for data back up and retrieval will be followed to ensure that the scientific community has long-term access to the data.

❖ *Data dissemination*

We anticipate a minimum of 12 abstracts, as well as a minimum of 6 refereed papers and student PhD dissertations. Data will be available through the online archives of these journals in addition to the databases mentioned above. We anticipate that the abstracts will be submitted to the GSA Annual Meeting, AGU Fall Meeting, and V. M. Goldschmidt conference, among other specialty meetings. Moreover, we will provide these data in parallel

to the Geochron portal of the EarthChem/IEDA digital database, and the Paleobiology Database, open access data archives supported by the NSF.

❖ *Responsibility*

The PIs of the project will be responsible for data management in each facility node.