

# ezEML+MOTHER Overview

ezEML+MOTHER is a tool for assisting scientists with the specification of the metadata that must be supplied with the histology images to be shared. This tool leverages the ezEML tool, which was created by the Environmental Data Initiative (EDI), for data provenance and adds metadata specific for MOTHER.

The use of the ezEML+MOTHER Web application requires a login, which can be automatically requested with email verification required. Then you can work on documents across sessions and can submit an image with metadata to MOTHER.

## Navigation

Use the top navigation bar to create or open a document, or to upload/download an XML file.

Use the left navigation bar to enter in the various metadata. The left navigation bar indicates the high-level topics within the tool. Essentially, the items above the first line are the topics leveraged from ezEML, with the exception of Image, which has been redesigned for MOTHER. The Donor and Immunohistochemistry topics are specific to MOTHER.

The screenshot shows the top navigation bar with links: MOTHERezEML+MOTHER, Documents, Upload/Download, User Guide, and About. Below the bar, it says 'Welcome Back dietrich@asu.edu' and 'Active Document: test2023-02-07'. The left sidebar contains a 'Contents' menu with items: Title (selected), Image, People, Abstract and Keywords, Intellectual Rights, Geographic/Temporal Coverage, Taxonomic Coverage, Methods, and Project. Below this, there are sections for 'Donor' and 'Immunohistochemistry', and at the bottom, 'Check Metadata' and 'Submit Metadata'. The main content area is titled 'Title' and contains the text 'Enter a title for the image:'. Below this is a text input field labeled 'Title \*' with a question mark icon to its right. At the bottom of the form are two buttons: 'Save and Continue' and 'Reset Changes' with a question mark icon.

## Image:

The Name and Data Format fields will be automatically filled by the selection of the Upload Image. For histology images, enter histology for Image Type. Additional Info is a text area for any additional information to share about the image that is not in the Donor or Immunohistochemistry forms. For example, any measurements of the donor taken.

The screenshot shows the 'Image' form with the title 'Image' and a question mark icon. The text 'Enter information about the image:' is at the top. Below this are three text input fields: 'Name \*', 'Image Type (e.g., histology) \*', and 'Data Format (e.g., tif) \*'. Below these fields are two columns: 'Upload Image' and 'Uploaded Image'. The 'Upload Image' column has a 'Browse...' button and the text 'No file selected.'. The 'Uploaded Image' column has the text 'None'. Below these columns is a text area labeled 'Additional Info'. At the bottom of the form are two buttons: 'Upload and Continue' and 'Reset Changes'.

## ezEML+MOTHER Overview

**People:** At least one creator and at least one contact is required.

- Creators: an author of the data, i.e. a person responsible for intellectual input into its creation
- Contacts: the designated contact for the data manager
- Associated Parties: involved with the data in some way, e.g., technicians, students, assistants
- Metadata Providers: producing or providing provided the metadata content

**Abstract and Keywords:**

- Abstract: include any information that does not fit into the structured metadata
- Keywords: terms in support of keyword search in MOTHERDB, e.g. any term describing treatment, disease, pathology, phenotype, toxicology, or toxin/toxicant exposure

**Intellectual Rights:** CC0 or CC BY can be chosen with a radio button. Other licenses can be specified.

**Geographic/Temporal Coverage:** Specifications can be included if applicable for data related to the geographic or temporal information for the donor animal

**Taxonomic Coverage:** Required specification of the taxa for the donor animal; Supports lookup in select taxonomic authorities based on the Taxon Scientific Name

**Methods:** Method steps are descriptions of specific steps of the method employed when collecting data. They are intended to be descriptive, i.e., human-readable rather than machine-readable. These may include text descriptions of the procedures, relevant literature, software, instrumentation, source data and any quality control measures taken.

**Project:** Documents the research context with a required title and optional abstract, and can include the specification of project personnel with various roles, funding awards, and related projects.

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**Donor:** Details information regarding the donor animal, including its life stage, reproduction cycle type, and stage of cycle. Also provides details on the histology slide, such as fixation, stain, and section thickness.

**Immunohistochemistry:** If the image is immunohistochemistry, provide the target protein, detection method, as well as primary and secondary antibodies.

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**Check Metadata:** Checks the completeness of the metadata

red: errors exist; orange: warnings exist; green: no warnings or errors

**Submit Metadata:** Submits the metadata and the image file for curation into MOTHER. Please download the zip file for your records.

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Donor ID must be a unique designation of the donor animal for the ovary image across *all* donors. Thus, this is not a simple number but should be an encoding of the lab-date-sequence that uniquely identifies the donor.

Donor ?

Donor ID *	Gender *	Years	Days	Life Stage *
<input type="text"/>	female	<input type="text"/>	<input type="text"/>	<input type="text"/>

Life Stage values are currently for mammals: fetal, neonatal, prepubertal, pubertal, adult, aging.

**MOTHER needs input for life stages for other species.**

Specimen Sequence Number *	Specimen Tissue *	Ovary Position *	Specimen Location	Corpus Luteum Type
<input type="text"/>	ovary	<input type="text"/>	<input type="text"/>	<input type="text"/>
Day Of Cycle	Cycle Type	Stage Of Cycle		
<input type="text"/>	<input type="text"/>	<input type="text"/>		
Follicular values	Luteal Values			
<input type="text"/>	<input type="text"/>			

Cycle Type values with stages are currently: menstrual, estrous

**MOTHER needs input for cycle types and stages for other species.**

Slide ID *	Section Sequence Number	Section Thickness *	Section Thickness Units *
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Slide ID: must be unique within Donor ID

Section Sequence Number: only if submitting a collection of images allowing for a 3d reconstruction

Section Thickness: Microns, NM

Fixation *	Other Fixation	Stain *	
<input type="text"/>	<input type="text"/>	<input type="text"/>	
Stain Light Type	Sudan Stain Value	Other Light Stain	
<input type="text"/>	<input type="text"/>	<input type="text"/>	
Stain Fluorescent Type	Other Fluorescent Stain	Stain Electron Type	Other Electron Stain
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Fixation and Stain are required. Selections enable/disable dropdowns.

Fixation: Neutral Buffered Formalin 10, Paraformaldehyde, Davidsons, Neutral Buffered Formalin5 acetic Acid, Bouins, Other

Stain: Light, Fluorescent, Electron

Magnification *	Microscope Maker	Microscope Model
<input type="text"/>	<input type="text"/>	<input type="text"/>
Microscope Notes		
<input type="text"/>		

Save and Continue

Reset Changes

Specimen Sequence Number: This is typically 1, unless there are multiple ovaries collected for the same donor.

Ovary Position: Left, Right, Unspecified

Specimen Location: whole ovary, ovarian cortex, ovarian medulla, follicle, corpus luteum, unspecified

**MOTHER needs input for other species for specimen location.**

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Immunohistochemistry ?

Is this image immunohistochemistry?

Yes ▾

If your slide image is immunohistochemistry, all fields with an \* are required. See image below of dropdown values for Detection Method.

Target Protein \*

Detection Method

ABC (avidin-biotin complex) ▾

Primary Antibody

Target Species *	Host Species *	Dilution *
Lot Number *	Cat Number *	
Source Name *	Source City *	Source State *
RRID	Clonality	
	▾	

Secondary Antibody

Target Species *	Host Species *	Dilution *
Lot Number *	Cat Number *	
Source Name *	Source City *	Source State *
RRID		

Save and Continue

Reset Changes

Detection Methods Dropdown:

ABC (avidin-biotin complex)

Alkaline Phosphates

Diaminobenzidine

FITC

Horseradish Peroxidase

LSAB (labeled streptavidin-biotin)

RPE