Metabolon	Document #	Version	Page
	PHNX-ONT	2.0	1 of 9
Document Title: Approved Ontology List			
System: PHNX	**Associated Validation #:** NA		

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REVISION HISTORY

The last revision level supersedes the previous revision level

Revision Number	Preparation Date	Reason for Revision	Author
1.0	12/10/2020	Original Document	C. Nessner
2.0	02/05/2024	Update lists and add Lab Workflows	K. Wong

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1 PURPOSE

The purpose of this document is to outline a hierarchical matrix ontology system that is applicable across all functions within Metabolon.

2 SCOPE

The scope of this document includes the most up to date ontology hierarchy as determined by a group of representatives intended to represent needs throughout Metabolon.

3 GLOSSARY

Term	Definition
Lab Workflow	Labvantage defined term that identifies the sample prep process for a given matrix and matrix type.
Matrix	Parent of matrix type; broad category grouping biospecimen types
Matrix Type	Child of matrix; specifies the precise categorization of the biospecimen type
Ontology	Defines the types of entities and their relationships within Metabolon. The ontology described herein encompasses the biospecimens we regularly process
Organism	Parent of Species; broad category referring to the source of the biospecimen
Species	Child of Organism; specifies the precise species the biospecimen was derived from

4 ORGANISM AND SPECIES

Organism and species are used to identify the source of the biospecimen that Metabolon processes. This list contains the most commonly handled organisms and species at Metabolon based on historical data (>5 projects in mLIMS). The designation of "Other" is applicable for novel organisms or species, and it should be accompanied by detailed specifications that clearly identify the organism or species in question. Leveraging this ontology ensures the uniform use of terminology across the contracting process, platform operations, report generation, and project tracking, facilitating more transparent cross-functional communication.

ORGANISM	SPECIES
Mammal	Human
Mammal	Cow
Mammal	Dog
Mammal	Horse
Mammal	Cat
Mammal	Marine mammal
Mammal	Pig
Mammal	Rabbit
Mammal	Sheep
Mammal	Non-human primate
Mammal	Hamster
Mammal	Rat
Mammal	Squirrel
Mammal	Mouse
Microbe	Bacteria
Microbe	Fungus
Microbe	Mycobacteria
Microbe	Yeast
Non-mammal	Amphibian
Non-mammal	Bird
Non-mammal	Chicken
Non-mammal	Drosophila
Non-mammal	Fish
Non-mammal	Insect
Non-mammal	Mussel
Non-mammal	Nematode
Plant	Alfalfa
Plant	Algae
Plant	Arabidopsis

Plant	Brassica
Plant	Cacao
Plant	Camelina
Plant	Cucumber
Plant	Grape
Plant	Corn
Plant	Orange
Plant	Peanut
Plant	Pine
Plant	Rice
Plant	Sorghum
Plant	Soybean
Plant	Sugarcane
Plant	Tobacco
Plant	Tomato
Plant	Walnut
Plant	Wheat
Other	Other

5 MATRIX, MATRIX TYPE AND LAB WORKFLOWS

Matrix and Matrix Type define the precise biospecimen that Metabolon processes for any given project. There is a one-to-many relationship between Matrix, Matrix Type and Lab Workflow. This system of naming biospecimens allows for clear characterization of downstream lab workflows, report generation and tracking of trends in Metabolon projects. Leveraging this ontology ensures the uniform use of terminology across the contracting process, platform operations, report generation, and project tracking, facilitating more transparent cross-functional communication. The inclusion of Lab Workflows identifies the processing methods used by sample prep based on resources required.

MATRIX	MATRIX_TYPE	Lab Workflows
Plasma	EDTA plasma	Osmolality Independent Biofluids
Plasma	Heparinized plasma	Osmolality Independent Biofluids
Plasma	Citrate plasma	Osmolality Independent Biofluids
Plasma	Peripheral collection device	Special Protocol
Serum	Serum	Osmolality Independent Biofluids
Serum	Card	Dry Blood Spot
Serum	Peripheral collection device	Special Protocol
Tissue	Adipose	Non-Fecal Biosolids
Tissue	Bone	Non-Fecal Biosolids

MATRIX	MATRIX_TYPE	Lab Workflows
Tissue	Bone marrow	Non-Fecal Biosolids
Tissue	Brain, other	Non-Fecal Biosolids
Tissue	Brain, cerebellum	Non-Fecal Biosolids
Tissue	Brain, cortex	Non-Fecal Biosolids
Tissue	Brain, whole	Non-Fecal Biosolids
Tissue	Breast	Non-Fecal Biosolids
Tissue	Embryo	Non-Fecal Biosolids
Tissue	Endometrium	Non-Fecal Biosolids
Tissue	Epithelium	Non-Fecal Biosolids
Tissue	Hair follicle	Non-Fecal Biosolids
Tissue	Heart	Non-Fecal Biosolids
Tissue	Intestine, other	Non-Fecal Biosolids
Tissue	Intestine, cecum	Non-Fecal Biosolids
Tissue	Intestine, large	Non-Fecal Biosolids
Tissue	Intestine, rectum	Non-Fecal Biosolids
Tissue	Intestine, small	Non-Fecal Biosolids
Tissue	Kidney	Non-Fecal Biosolids
Tissue	Liver	Non-Fecal Biosolids
Tissue	Lung	Non-Fecal Biosolids
Tissue	Mixed	Non-Fecal Biosolids
Tissue	Muscle	Non-Fecal Biosolids
Tissue	Nerve	Non-Fecal Biosolids
Tissue	Ocular tissue, lens	Non-Fecal Biosolids
Tissue	Ocular tissue,r	Non-Fecal Biosolids
Tissue	Ovary	Non-Fecal Biosolids
Tissue	Pancreas	Non-Fecal Biosolids
Tissue	Placenta	Non-Fecal Biosolids
Tissue	Prostate	Non-Fecal Biosolids
Tissue	Skin	Non-Fecal Biosolids
Tissue	Spinal cord	Non-Fecal Biosolids
Tissue	Spleen	Non-Fecal Biosolids
Tissue	Testis	Non-Fecal Biosolids
Tissue	Xenograft	Non-Fecal Biosolids
Fluid	Amniotic fluid	Osmolality Independent Biofluids
Fluid	Aqueous humor	Osmolality Independent Biofluids
Fluid	Milk	Osmolality Independent Biofluids
Fluid	Bronchoalveolar lavage (BALF)	Osmolality Independent Biofluids
Fluid	Dialysate	Osmolality Independent Biofluids

MATRIX	MATRIX_TYPE	Lab Workflows
Fluid	Hydrolysate	Osmolality Independent Biofluids
Fluid	Intestinal fluid	Osmolality Independent Biofluids
Fluid	Lung	Osmolality Independent Biofluids
Fluid	Lymph	Osmolality Independent Biofluids
Fluid	Placenta	Osmolality Independent Biofluids
Fluid	Saliva	Osmolality Dependent Biofluids
Fluid	Solution	Osmolality Independent Biofluids
Fluid	Sweat	Special Protocol
Fluid	Tears	Special Protocol
Fluid	Semen	Osmolality Independent Biofluids
Fluid	Vaginal swab	Special Protocol
Fluid	Nasal secretion	Osmolality Independent Biofluids
Fluid	Synovial fluid	Osmolality Independent Biofluids
Fluid	Brain fluid	Osmolality Independent Biofluids
Fluid	Ascites	Osmolality Independent Biofluids
Fluid	Bile	Osmolality Independent Biofluids
Fluid	Breath condensate	Special Protocol
Fluid	Follicular	Osmolality Independent Biofluids
Fluid	Perfusate	Osmolality Independent Biofluids
Fluid	Vitreous fluid	Osmolality Independent Biofluids
Fluid	Juice	Osmolality Independent Biofluids
Fluid	Mucosal epithelia	Cells
Fluid	Saline solution	Osmolality Independent Biofluids
Fluid	Hemolymph	Special Protocol
Fluid	Cell media	Osmolality Dependent Biofluids
Urine	DRE urine	Osmolality Dependent Biofluids
Urine	urine	Osmolality Dependent Biofluids
Urine	DRE sediment	Non-Fecal Biosolids
Cells	Algae	Cells
Cells	Bacteria	Cells
Cells	CHO	Cells
Cells	Hepatocytes	Cells
Cells	Leukocytes	Cells
Cells	Macrophage	Cells
Cells	Mammalian (non-CHO)	Cells
Cells	Yeast	Cells
Cells	Fungus	Cells
Feces	Frozen feces	Fecal Biosolids
Feces	OmniMet	Fecal Biosolids

MATRIX	MATRIX_TYPE	Lab Workflows
Feces	Fecal card	Fecal Biosolids
Plant Tissue	Ear	Non-Fecal Biosolids
Plant Tissue	Hydrolysate	Osmolality Independent Biofluids
Plant Tissue	Leaf	Non-Fecal Biosolids
Plant Tissue	Mixed	Non-Fecal Biosolids
Plant Tissue	Root	Non-Fecal Biosolids
Plant Tissue	Seed	Non-Fecal Biosolids
Plant Tissue	Shank	Non-Fecal Biosolids
Plant Tissue	Stem	Non-Fecal Biosolids
Plant Tissue	Shoot	Non-Fecal Biosolids
Plant Tissue	Flower	Non-Fecal Biosolids
Plant Tissue	Phloem	Non-Fecal Biosolids
Plant Tissue	Fruit	Non-Fecal Biosolids
Tissue Extract	Bone	Special Protocol
Tissue Extract	Bone marrow	Special Protocol
Tissue Extract	Brain	Special Protocol
Tissue Extract	Breast	Special Protocol
Tissue Extract	Colon	Special Protocol
Tissue Extract	Embryo	Special Protocol
Tissue Extract	Epithelium	Special Protocol
Tissue Extract	Intestine	Special Protocol
Tissue Extract	Kidney	Special Protocol
Tissue Extract	Liver	Special Protocol
Tissue Extract	Lung	Special Protocol
Tissue Extract	Lymph	Special Protocol
Tissue Extract	Muscle	Special Protocol
Tissue Extract	Nerve	Special Protocol
Tissue Extract	Ovary	Special Protocol
Tissue Extract	Pancreas	Special Protocol
Tissue Extract	Prostate	Special Protocol
Tissue Extract	Skin	Special Protocol
Cell Extract	Bacteria	Special Protocol
Cell Extract	CHO	Special Protocol
Cell Extract	Hepatocytes	Special Protocol
Cell Extract	Macrophage	Special Protocol
Cell Extract	Stem	Special Protocol
Cell Extract	Yeast	Special Protocol
Cell Extract	Fungus	Special Protocol
Cell Extract	Mycobacteria	Special Protocol

MATRIX	MATRIX_TYPE	Lab Workflows
Cell Extract	Algae	Special Protocol
Cell Extract	Leukocytes	Special Protocol
Cell Extract	Mammalian (non-CHO)	Special Protocol
Cell Extract	organelle	Special Protocol
CSF	CSF	Osmolality Independent Biofluids
Blood	Dried blood spot (DBS)	Dry Blood Spot
Blood	Cord blood	Osmolality Independent Biofluids
Blood	Platelets	Osmolality Independent Biofluids
Blood	Red blood cells	Cells
Blood	Whole blood	Osmolality Independent Biofluids
Blood	Peripheral collection device	Special Protocol
Tumor Tissue	Brain	Non-Fecal Biosolids
Tumor Tissue	Intestine	Non-Fecal Biosolids
Tumor Tissue	Muscle	Non-Fecal Biosolids
Tumor Tissue	Skin	Non-Fecal Biosolids
Tumor Tissue	Breast	Non-Fecal Biosolids
Tumor Tissue	Kidney	Non-Fecal Biosolids
Whole Organism	Drosophila, adult	Non-Fecal Biosolids
Whole Organism	Drosophila, larvae	Non-Fecal Biosolids
Whole Organism	Insect, adult	Non-Fecal Biosolids
Whole Organism	Nematode	Non-Fecal Biosolids
Whole Organism	Insect, larvae	Non-Fecal Biosolids
Solid material	Dog Food	Non-Fecal Biosolids
Solid material	Cat Food	Non-Fecal Biosolids
Solid material	Food	Non-Fecal Biosolids
Solid material	Soil	Non-Fecal Biosolids
Skin Tape	Sebutape	by platform approval only
Skin Tape	D-squame tape	Special Protocol
Organoid	Tissue	Cells
Organoid	Organoid media	Osmolality Independent Biofluids
Other	Other	Special Protocol