ISA Section	Label	Class	Datatype	Ontology source	Description	*In vivo*	*In vitro*	*Ex vivo*
Investigation								
Study Description								
	Study Identifier		Unique ID			X	X	X
	Study Title		String			X	X	X
	Study Description		String			X	X	X
	Study Grant Number		String			X	X	X
	Study Funding Agency		String			X	X	X
Study Design Descriptors								
	Study Design Type		Ontology	EFO		X	X	X
Study Publications								
	Pubmed ID		string			X	X	X
	Publication DOI		string			X	X	X
	Author list		string			X	X	X
	Publication title		string			X	X	X
	Publication status		string			X	X	X
Study Contacts								
	Last name		string			X	X	X
	First name		string			X	X	X
	Middle Initials		string			X	X	X
	Email		string			X	X	X
	Phone		string			X	X	X
	Fax		string			X	X	X
	Address		string			X	X	X
	Affiliation		string			X	X	X
	Role		string			X	X	X
	ORCID		string			X	X	X
Study								
Animal details								
	Organism	Characteristic	Ontology	NCBI Taxonomy	Provide taxonomic information associated to the source biological material. This should be included as an NCBI_TAXON ID unless not found within NCBI.	X	X	X
	Strain	Characteristic	Ontology	Rat Strain Ontology (RS); EFO	Provide strain information associated to the source biological material.	X		X
	Cell line	Characteristic	Ontology	Cell Culture Ontology (CCONT)			X	
	Sex	Characteristic	Ontology	EFO	Sex of the study organism. Must be one of the following: FEMALE, MALE	X		X
	Study start age	Parameter	Number		Age of the organism at the time the first dose was administered.	X		X
	Study end age	Parameter	Number		Age of the organism when the terminal sample was collected.	X		X
	Age Unit	Characteristic	Ontology	EFO	Unit used to calculate animal age during the study. Must be one of the following: HOURS,DAYS,WEEKS,MONTHS,YEARS,DEVELOPMENTAL STAGE	X		X
Housing conditions								
	Average Vivarium Temperature	Parameter	Number		Average vivarium temperature during the study	X		X
	Temperature Unit	Characteristic	Ontology	EFO	Unit used to measure average vivarium temperature. Must be one of the following: CELSIUS,FAHRENHEIT	X		X
	Average Vivarium Humidity	Parameter	Number		Average vivarium humidity during the study	X		X
	Humidity Unit	Characteristic	Ontology	EFO	Unit used to measure average vivarium humidity. Must be one of the following: PERCENT,g/kg,g/m^2	X		X
	Vivarium Light Cycle	Parameter	String		Vivarium light cycle for the study period defined as light:dark formatted as number:number (e.g. 12:12, 03:21, ...)	X		X
	Cage Type	Parameter	String		Define the type of caging used for the study period	X		X

	Bedding Type	Parameter	String		Define the type of bedding used for the study period	X		X
	Water Type	Parameter	String		Define the water source for the study period	X		X
Diet exposure								
	Feed Name	Factor	String		Descriptive name of the diet	X		X
	Feed description	Parameter	String		Description of feed including, but not limited to, macronutrient composition	X		X
	Feed source	Parameter	String		Vendor of the feed tested if commercially available	X		X
	Feed catalog number	Parameter	String		Catalog number of the feed if commercially available.	X		X
Toxic substance exposure								
	Toxic Substance Name	Factor	String		Descriptive name of the toxic substance or mixture			
	Toxic Substance	Characteristic	Ontology	CHEBI	CHEBI identifier(s) of the toxic substance. For a list of substances in a mixture use a semi-colon (;) between identifier.	X	X	X
	Vehicle Substance	Characteristic	Ontology	CHEBI	Name of the vehicle compound used to deliver the toxic substance or mixture.	X	X	X
	Administration Interval	Parameter	Number		Amount of time between subsequent doses when multiple doses are administered over a period of time.	X	X	X
	Administration Interval Unit	Characteristic	Ontology	EFO	Unit for the amount of time between subsequent doses when multiple doses are administered over a period of time. Must be one of the following: SECONDS,MINUTES,HOURS,DAYS,WEEKS,MONTHS,YEARS	X	X	X
	Number of Administrations	Parameter	Number		The number of doses administered when multiple doses are given over a period of time.	X	X	X
	Administration Route	Parameter	String		The delivery mechanism for the toxicant tested. Must be one of the following: GAVAGE,INTRAPERITONEAL,RETRO-ORBITAL,TAIL VEIN INJECTION,DIET,WATER,DOUGH PILL	X	X	X
	Dose	Factor	Number		Dose of the toxic substance	X	:oncentrat	X
	Dose Unit	Characteristic	Ontology	EFO	Unit describing toxicant dose administered. Must be one of the following: pg/kg,ng/kg,ug/kg,mg/kg,g/kg	X	:oncentrat	X
	Chemical Source	Parameter	String		Vendor of the toxic substance tested if commercially available	X	X	X
	Chemical Catalog Number	Parameter	String		Catalog number of the toxicant if commercially available.	X	X	X
	Chemical Purity	Parameter	String; Attachment		Chemical purity of the toxic substance. A sample information sheet from the vendor can be attached.	X	X	X
Exposure details								
	Time-point	Factor	Number		Terminal time-point.	X	X	X
	Time-point Unit	Characteristic	Ontology	EFO	Unit describing time post administation of dose when samples were collected. Must be one of the following: SECONDS,MINUTES,HOURS,DAYS,WEEKS,MONTHS,YEARS	X	X	X
Cell Culture Conditions (in progress)								
	Incubation temperature						X	X
	Gas composition						X	X
	Humidity						X	X
	Humidity Unit						X	X
	Culture dish type						X	X
	…							