

Label	IRI	rdfs:subPropertyOf	rdfs:domain	rdfs:range	owl:inverseOf	Definition	Comment
bearer of	http://purl.obolibrary.org/obo/RO_0000053	owl:topObjectProperty		specifically dependent continua			
has specified input	http://purl.obolibrary.org/obo/OBI_0000293	has participant	planned process				
has specified output	http://purl.obolibrary.org/obo/OBI_0000299	has participant	planned process				
has participant	http://purl.obolibrary.org/obo/RO_0000057	owl:topObjectProperty	occurent	continuant			
has part	http://purl.obolibrary.org/obo/BFO_0000051	owl:topObjectProperty					
is about	http://purl.obolibrary.org/obo/IAO_0000136	owl:topObjectProperty	information content entity				
is quality measurement of	http://purl.obolibrary.org/obo/IAO_0000241	is about	measurement datum	quality	is quality measured as		
is quality measured as	http://purl.obolibrary.org/obo/IAO_0000417	owl:topObjectProperty	quality	measurement datum	is quality measurement of		
derives from	http://purl.obolibrary.org/obo/RO_0001000	owl:topObjectProperty	independent continuant	independent continuant			
is study of	http://project-genesys.io/ontology#GEN_000019	is about	study design	yeast			
has duration	http://project-genesys.io/ontology#GEN_000020	owl:topObjectProperty	cell culturing	cell culturing duration datum	is duration of		
has specified sampling time	http://project-genesys.io/ontology#GEN_000021	has specified input	material sampling process	sampling time datum			
owl:topObjectProperty	http://www.w3.org/2002/07/owl#topObjectProperty	owl:topObjectProperty					
owl:topDataProperty	http://www.w3.org/2002/07/owl#topDataProperty	owl:topDataProperty					
has concentration	http://purl.obolibrary.org/obo/BCGO_0000183	owl:topObjectProperty	molecular entity	concentration of datum			
is duration of	http://purl.obolibrary.org/obo/IAO_0000413	is about	process duration datum	process			
has material sampling	http://project-genesys.io/ontology#GEN_000009	has part	cell culturing	material sampling process			
has stated regimes	http://project-genesys.io/ontology#GEN_000010	has part	study design				
has stated sampling timings	http://project-genesys.io/ontology#GEN_000011	has part	study design				
has stated temperature	http://project-genesys.io/ontology#GEN_000012	has part	cell culturing regime	temperature datum			
has stated pH	http://project-genesys.io/ontology#GEN_000013	has part	cell culturing regime	pH datum			
has stated growth medium	http://project-genesys.io/ontology#GEN_000014	mentions	cell culturing regime	Growth Medium			
has stated composition	http://project-genesys.io/ontology#GEN_000015	has part	cell culturing regime	Growth Medium composition			
has stated flow rate	http://project-genesys.io/ontology#GEN_000016	has part	cell culturing regime	volumetric flow rate datum			
has stated concentration	http://project-genesys.io/ontology#GEN_000017	has part	Growth Medium composition	concentration of datum			
has stated regime durations	http://project-genesys.io/ontology#GEN_000025	has part	study design				
has specified regime	http://project-genesys.io/ontology#GEN_000018	has specified input	cell culturing	cell culturing regime			
has specified microplate well	http://project-genesys.io/ontology#GEN_000036	has specified input	cell culturing	Microplate Well			
has specified growth medium	http://project-genesys.io/ontology#GEN_000037	has specified input	cell culturing	Growth Medium			
has specified yeast	http://project-genesys.io/ontology#GEN_000038	has specified input	cell culturing	yeast			
mentions	http://purl.obolibrary.org/obo/IAO_0000142	is about					
has member	http://purl.obolibrary.org/obo/RO_0002351	has part					
has value specification	http://purl.obolibrary.org/obo/OBI_0001938	has part	information content entity	value specification			
has specified value	http://purl.obolibrary.org/obo/OBI_0002135	owl:topDataProperty	value specification				
has specified numeric value	http://purl.obolibrary.org/obo/OBI_0001937	has specified value	value specification	http://www.w3.org/2002/07/owl#			
inheres in	http://purl.obolibrary.org/obo/RO_0000052	owl:topObjectProperty			bearer of		
quality of	http://purl.obolibrary.org/obo/RO_0000080	inheres in					
has measurement unit label	http://purl.obolibrary.org/obo/IAO_0000039	has part		measurement unit label			
part of	http://purl.obolibrary.org/obo/BFO_0000050	owl:topObjectProperty			has part		
is collection of	http://project-genesys.io/ontology#GEN_000039	owl:topObjectProperty		List			

Label	IRI	rdfs:subClassOf	Definition	Comment
temperature datum	http://project-genesis.io/ontology#GEN_000031	setting datum		
sampling time datum	http://project-genesis.io/ontology#GEN_000029	data item		
cell culturing duration datum	http://project-genesis.io/ontology#GEN_000033	process duration datum		
process duration datum	http://project-genesis.io/ontology#GEN_000034	data item		
count	http://purl.obolibrary.org/obo/STATO_0000047	measurement datum		
gene count datum	http://project-genesis.io/ontology#GEN_000027	count		
pH datum	http://project-genesis.io/ontology#GEN_000032	setting datum		
concentration of datum	http://project-genesis.io/ontology#GEN_000001	data item		
volumetric flow rate datum	http://project-genesis.io/ontology#GEN_000002	setting datum		
cell culturing regime	http://project-genesis.io/ontology#GEN_000003	information content entity	Specification of the control	
gene	http://purl.obolibrary.org/obo/OGG_000000002	material entity		
concentration value specification	http://project-genesis.io/ontology#GEN_000004	value specification		
temperature value specification	http://purl.obolibrary.org/obo/OBI_0002138	value specification		
pH value specification	http://project-genesis.io/ontology#GEN_000005	value specification		
volumetric flow rate value specification	http://purl.obolibrary.org/obo/PDRO_0010033	value specification		
time value specification	http://purl.obolibrary.org/obo/GENEPIO_0002113	value specification		
sampling time value specification	http://project-genesis.io/ontology#GEN_000007	value specification		
gene count value specification	http://project-genesis.io/ontology#GEN_000026	value specification		
data set	http://purl.obolibrary.org/obo/IAO_0000100	data item		
gene count data set	http://project-genesis.io/ontology#GEN_000028	data set		
Microplate Well	http://purl.obolibrary.org/obo/NCIT_C128793	material entity		
Growth Medium	http://purl.obolibrary.org/obo/NCIT_C85504	material entity		
yeast	http://purl.obolibrary.org/obo/FOODON_03411345	material entity		
bioreactor	http://purl.obolibrary.org/obo/OBI_0001046	material entity		
Microplate	http://purl.obolibrary.org/obo/NCIT_C43377	material entity		
molecular entity	http://purl.obolibrary.org/obo/CHEBI_23367	material entity		
material sample	http://purl.obolibrary.org/obo/OBI_0000747	material entity		
genome structure	http://project-genesis.io/ontology#GEN_000006	quality		
cell culturing	http://purl.obolibrary.org/obo/ENVO_01001815	planned process		
material sampling process	http://purl.obolibrary.org/obo/OBI_0000744	planned process		
temperature	http://purl.obolibrary.org/obo/PATO_0000146	quality		
fluid flow rate	http://purl.obolibrary.org/obo/PATO_0002243	quality		
concentration of	http://purl.obolibrary.org/obo/PATO_0000033	quality		
study design	http://purl.obolibrary.org/obo/OBI_0500000	information content entity		
planned process	http://purl.obolibrary.org/obo/OBI_0000011	process		
assay	http://purl.obolibrary.org/obo/OBI_0000070	planned process		
material entity	http://purl.obolibrary.org/obo/BFO_0000040	independent continuant		
information content entity	http://purl.obolibrary.org/obo/IAO_0000030	generically dependent continua		
quality	http://purl.obolibrary.org/obo/BFO_0000019	specifically dependent continua		
generically dependent continuant	http://purl.obolibrary.org/obo/BFO_0000031	continuant		
continuant	http://purl.obolibrary.org/obo/BFO_0000002	entity		
occurent	http://purl.obolibrary.org/obo/BFO_0000003	entity		
process	http://purl.obolibrary.org/obo/BFO_0000015	occurent		
specifically dependent continuant	http://purl.obolibrary.org/obo/BFO_0000020	continuant		
entity	http://purl.obolibrary.org/obo/BFO_0000001	Thing		
independent continuant	http://purl.obolibrary.org/obo/BFO_0000004	continuant		
measurement datum	http://purl.obolibrary.org/obo/IAO_0000109	data item		
setting datum	http://purl.obolibrary.org/obo/IAO_0000140	data item		
scalar measurement datum	http://purl.obolibrary.org/obo/IAO_0000032	measurement datum		
data item	http://purl.obolibrary.org/obo/IAO_0000027	information content entity		
volumetric flow rate unit	http://purl.obolibrary.org/obo/IAO_0000270	measurement unit label		
measurement unit label	http://purl.obolibrary.org/obo/IAO_0000003	datum label		
datum label	http://purl.obolibrary.org/obo/IAO_0000009	information content entity		
time unit	http://purl.obolibrary.org/obo/UO_0000003	measurement unit label		
volume unit	http://purl.obolibrary.org/obo/UO_0000095	measurement unit label		
concentration unit	http://purl.obolibrary.org/obo/UO_0000051	measurement unit label		
temperature unit	http://purl.obolibrary.org/obo/UO_0000005	measurement unit label		
value specification	http://purl.obolibrary.org/obo/OBI_0001933	information content entity		
Thing	http://www.w3.org/2002/07/owl#Thing	Thing		
Growth Medium composition	http://project-genesis.io/ontology#GEN_000008	information content entity		
composition	http://purl.obolibrary.org/obo/PATO_0000025	quality		
Transcriptomics	http://purl.obolibrary.org/obo/NCIT_C153189	assay		
specimen collection process	http://purl.obolibrary.org/obo/OBI_0000659	planned process		
List	http://www.w3.org/1999/02/22-rdf-syntax-ns#List	Class		
Class	http://www.w3.org/2000/01/rdf-schema#Class	Class		

Label	IRI	Ontobee graph	rdf:type	Definition	Comment
<i>gram per litre</i>	http://purl.obolibrary.org/obo/VO_0000175	http://purl.obolibrary.org/obo/merged/OB/	concentration unit		
<i>degree Celsius</i>	http://purl.obolibrary.org/obo/VO_0000027	http://purl.obolibrary.org/obo/merged/OB/	temperature unit		
<i>pH</i>	http://purl.obolibrary.org/obo/VO_0000196	http://purl.obolibrary.org/obo/merged/OB/	concentration unit		
<i>Milliliter per Hour</i>	http://purl.obolibrary.org/obo/NCIT_C66962	http://purl.obolibrary.org/obo/merged/NCIT/	volumetric flow rate unit		
<i>hour</i>	http://purl.obolibrary.org/obo/VO_0000032	http://purl.obolibrary.org/obo/merged/OB/	time unit		
<i>milliliter</i>	http://purl.obolibrary.org/obo/VO_0000098	http://purl.obolibrary.org/obo/merged/OB/	volume unit		

IRI generation params		ontolgoy version		
Prefix	http://project-genesis.io/ontology#GEN_	major version	minor version	revision
ID size	6	0	0	27
ID Lower limit(inclusive)	0			
ID Upper limit(inclusive)	999999			
Current count	39			

The **relations**, **entitites** and **instances** sheet contains list of terms in ontology. The terms that are highlighted as red are new custom terms required for the current application. The rest of the terms are imported from existing ontologies.

The column names in the **relations**, **entitites** and **instances** sheet are read by csv-to-owl mapper in the github pipeline and hence should remain same. But they can be configured from [mapping.ttl](#) file

The **ontology-plugin-config** sheet contains configuration information that is used by attached google apps script for tracking used IRI counts and ontology version with which the ontology is pushed to the configured github repository. The apps script reads the configuration information from the specific cells at the exact range location. The cell locations can be changed from the apps script.

The link to the github repository to which the ontology is pushed can be configured from the attached apps script. The github repostory should have the pipeline established to map csv to owl, user can fork <https://github.com/TW-Genesis/genesis-csv-to-owl-mapper.git> for establishing the pipeline.

User needs to create a copy of this sheet to be able to run and see the attached apps script.

Additional comments are added in the attached apps script.