

LINCS standardized primary cell information								Notes
Unique ID	LINCS Field Name	Related to	Description	Importance (1: essential; 2: desirable / recommended; 3: optional)	Comments	Ontologies / references considered	Link to ontology / reference	Additional Notes (for development)
PC:1	PC_Name	canonical cell	The name for the primary cells as chosen by LINCS	1	Should be descriptive and correspond to existing cell names as much as possible; batch independent name	need terminology for standard cell name		
PC:2	PC_ID	canonical cell	Unique LINCS internal identifier	1	LINCS internal ID; this is a batch independent ID; canonical primary cell ID			
PC:3	PC_Alternate_Name	canonical cell	Other relevant names	2	synonymous or alternative names; but only significant difference			
PC:4	PC_Alternate_ID	canonical cell	Other relevant IDs for cells	2	CLO or other synonymous IDs			
PC:5	PC_Center_Name	canonical cell		1	LINCS center using the primary cells			
PC:6	PC_Center_Specific_ID	canonical cell	LINCS center-specific cell ID; batch specific ID	1	LINCS-center specific primary cell ID; batch specific ID			
PC:7	PC_Provider_Name	batch	Name of vendor or lab (provider) that supplied the primary cell	1	Vendor(s) or provider	need to build the list of providers		
PC:8	PC_Provider_Catalog_ID	batch	ID or catalogue number or name assigned to the primary cell by the vendor or provider	1	Primary cell provider's IDs			
PC:9	PC_Batch_ID	batch	Vendor/Provider Batch ID number; Batch or lot number assigned to the primary cell by the vendor or provider	1				Include this in the CL database
PC:10	PC_Organism	canonical cell	Organism of origin; a controlled vocabulary describing the organism from which the primary cell was derived (e.g. Homo sapiens, Mus musculus, etc.)	1		NCBI Taxon: Organism	http://www.ncbi.nlm.nih.gov/Taxonomy/	
PC:11	PC_Organ	canonical cell	Organ of origin; controlled term describing the organ from which cell line is derived; (e.g. lung, mammary gland etc.)	1		UBERON, possibly CARO	http://bioportal.bioontology.org/ontologies/1404	
PC:12	PC_Tissue	canonical cell	Organ or tissue of origin; A controlled vocabulary describing the organ or tissue from which the primary cell was derived (e.g. lung, mammary gland etc.)	1	Some histology information might be provided in this field.	UBERON, possibly CARO	http://bioportal.bioontology.org/ontologies/1404	
PC:13	PC_Cell_Type	canonical cell	A controlled vocabulary describing the cell type from which a primary cell was derived; e.g. epithelial like, fibroblast-like, lymphoblast like, hematopoietic, mesenchymal, neural, etc. This provides information about cell morphology. Also sometimes referred to as cell morphology.	1	controlled terminology from CL	CL/'Cell in vivo'/cell by class/'cell by histology'	http://bioportal.bioontology.org/ontologies/1006	CL: cell by histology
PC:14	PC_Cell_Type_Detail	canonical cell	Additional description of cell type (histology) that is not available in CL, but may be known from other sources like ATCC	2	terms from other sources like ATCC; will develop over time			additional details; initially we need to allow free text
PC:15	PC_Disease	canonical cell	If the primary cell came from a particular diseased tissue, the disease should be noted in terms of a controlled vocabulary (e.g. breast cancer, colon cancer, not diseased, etc.)	1	the disease hierarchy is captured in the ontology; i.e. DOID	Human Disease Ontology (DOID); with possible link to CTD disease (but this is less comprehensive)	http://bioportal.bioontology.org/ontologies/1009	DOID:disease; CTD links to MeSH
PC:16	PC_Disease_Detail	canonical cell	Additional description of a disease related to the cell line that may not be available in the disease ontology above	2	need to develop what exactly should go here and the corresponding terms (e.g. tumor stage, cell from metastatic site, preceding treatments, etc)	to be developed; initially free text		may initially require free text
PC:17	PC_Growth_Properties	canonical cell	A controlled vocabulary describing the growth properties of the primary cell (e.g. adherent, suspension)	1		BAO with imports from CLO and OBI (needs development) BAO/'cell line specification'/cell line culturing'		Cell culturing
PC:18	PC_Genetic_Modification	canonical cell	Stable transfection or viral transduction. If yes, the modifications (e.g. expressing GFP-tagged protein) should be described and appropriate references provided.	1	MIACA is minimal information that may be a guidance	BAO and imported CLO terms (needs more work) BAO/'cell line specification'/cell line modification' BAO/'cell line specification'/transfection attributes'	http://bioportal.bioontology.org/ontologies/1533	If modified, need to capture corresponding parental cell (by ID / name)?; capture if stable or transient modification; e.g. infection of fusion? MIACA may provide additional guidance what details to capture; Cell modification: genetic modification; transfection: stable transfection; Cell modification: genetic modification; viral transduction

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PC:19	PC_Related_Projects	canonical cell line	Other projects in which the primary cells have been studied / used; A controlled vocabulary describing other large scale projects in which the cells have been used (e.g. ENCODE, TCGA, ICBP, Epigenomics, etc.)	2	Need some defined project code	to be developed if needed	http://bioportal.bioontology.org/ontologies/1533	Include this in the CL database
PC:20	PC_Recommended_Culture_Conditions	canonical cell	A description of the standard tissue culture conditions (media, supplements, culture dish treatment) used to maintain the primary cell. Description of culture dish treatment conditions would include information about coating of culture dish with fibronectin, collagen, etc. prior to cell plating. If special culture vessels are required to grow the cells, these should also be mentioned and details provided.	2	Recommended standard culturing conditions go here; not a required field; the actual culture conditions are captured as experimental conditions; see EXP_PC:2	BAO with imports from CLO and OBI (needs development) BAO/'cell line specification'/cell line culturing component'		If not free text, needs to be split into several fields to describe the culture conditions using controlled terms (not free text); this would also include culture vessel, size, cell density; also includes test for contamination (e.g. mycoplasma); Propagation conditions (ATCC describes this as 'Propagation')
PC:21	PC_Verification_Profile	batch	Information pertaining to experimental verification of the primary cell identity; batch-specific ID; STR profile	1	Acceptable protocols for verification will be determined by LINCS participants and a controlled vocabulary will be developed. Comment: We should at least make an effort to ensure cells within LINCS are the same – either by STR / SNP profiling or by actually exchanging vials previously matched to repository.	if applicable reference to ATCC; NIST and possibly CLO (in the future)	http://bioportal.bioontology.org/ontologies/1533	Cell verification or DNA profile (ATCC uses this term); if that's applicable
PC:22	PC_Verification_Reference_Profile	canonical cell	expected STR (reference) profile of the cell based on provider information, if available	1	from cell provider / reference			reference once NIST NCBI Cell DB exists
PC:23	PC_Mutations_Reference	canonical cell	Known mutation in primary cell from a reference; needs to include the reference source and the reference to the specific cell	1	reference to cell line inherent mutations	from COSMIC; reference to COSMIC	http://www.sanger.ac.uk/genetics/CGP/cosmic/	reference to primary cell inherent mutations
PC:24	PC_Mutations_Explicit	canonical cell	Known mutation in primary cell captured explicitly; e.g. if reference is not available	2	Needs some ontology to describe gene / protein and mutation	UniProt standard symbol and mutation code (difference from wild type)	http://www.uniprot.org/	
PC:25	PC_Organism_Gender	canonical cell	Describes gender of the organism from which the cell was obtained; can also include gender-related (i.e. chromosomal) cell characteristics	2	controlled terms to describe genders and also chromosomal abnormalities	need to develop allowed terms / codes		OBI: Quality: biological sex
PC:26	PC_Donor_Ethnicity	canonical cell	For human cells, the ethnicity of the donor	2		MeSH Thesaurus Persons/Population Groups/'Ethnic Groups'	http://bioportal.bioontology.org/ontologies/3019	alternate resource: http://www.nlm.nih.gov/cgi/mesh/2012/MB_cgi?mode=&term=Ethnic+Groups&field=entry
PC:27	PC_Donor_Age	canonical cell	The age of the donor	1	numeric number; donor age in years	integer	http://bioportal.bioontology.org/ontologies/3019	Quality: quality of a single physical entity: age
PC:28	PC_Donor_Health_Status	canonical cell	Controlled vocabulary describing the health status of the donor	1	need to be defined in more detail; need level of detail required			need to define 'health status in more detail, what level of detail is needed
PC:29	PC_Cell_Markers	canonical cell	A controlled vocabulary describing the markers used to isolate and identify the cell type	1	controlled terms of markers; at this point no reference	BAO / CLO need to be developed		at this point, need to be added w/o reference
PC:30	PC_Passage_Number	batch	The number of times, if any the primary cells have been re-plated and allowed to grow back to confluency or to some maximum density if using suspension cultures.	1		integer		
LINCS experimental primary cell related information (experiment specific treatment of primary cells)								Notes
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EXP_PC:1	PC_Culture_Conditions	batch	Actual culture conditions used for the primary cell in the context of the reported experiment / assay	1	These are the actual culturing conditions; free text for now?	CLO, BAO; needs extension BAO/'cell line specification'/cell line culturing component'		Free text for now? Otherwise needs to be split into several fields to describe the culture conditions using controlled terms, such as culture vessel, size, cell density; also includes test for contamination (e.g. mycoplasma); Cell culturing component: culture medium; Cell culturing component: assay medium

