	LINCS standardized cell line information							Notes	Field names from individual groups (placeholder)			
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)	Broad	Mitchison mitosis-apoptosis	MGH LINCS	MGH cell database (Cyril Benes)
CL:1	CL_Name	canonical cell line	The primary name for the cell line as chosen by LINCS	1	Should be descriptive and correspond to existing cell line names as much as possible; batch independent name	need terminology for standard cell line name			cell_id_atcc/cell id/cell_id_alt	CL:name	CMT Cell Line	Cell Line
CL:2	CL_ID	canonical cell line	Unique LINCS internal identifier	1	LINCS internal ID; this is a batch independent ID; canonical cell line ID							
CL:3	CL_Alternate_Name	canonical cell line	Other relevant names	2	synonymous or alternative names; but only significantly different names should be captured							
CL:4	CL_Alternate_ID	canonical cell line	Other relevant IDs for cell lines	2	CLO or other common IDs referring to the same cell line							
CL:5	CL_Center_Name	canonical and batch		1	LINCS center using the cell line							
CL:6	CL_Center_Specific_ID	canonical and batch	LINCS center-specific cell line ID; batch specific ID	1	LINCS-center specific cell line ID; batch specific ID							
CL:7	CL_Provider_Name	cell line batch	Name of vendor or lab (provider) that supplied the cell line	1	ATCC or other vendor(s) or provider	need to build the list of providers			cell_vendor_id	CL:source (need to separate the vender ID)	Biosource Origin	Origin
CL:8	CL_Provider_Catalog_ID	cell line batch	ID or catalogue number or name assigned to the cell line by the vendor or provider	1	ATCC or other cell line provider's IDs					CL:source (need to separate the vender name)		
CL:9	CL_Batch_ID	cell line batch	Vendor/Provider Batch ID number; Batch or lot number assigned to the cell line by the vendor or provider	1	provided by the cell line provider			Include this in the CL database				
CL:10	CL_Organism	canonical cell line	Organism of origin; a controlled vocabulary describing the organism from which the cell line was derived (e.g. Homo sapiens, Mus musculus, etc.)	1	exact NCBI name	NCBI Taxon: Organism	http://www.ncbi.nlm.nih.gov/Taxonomy/		cell_source_organism			
CL:11	CL_Organ	canonical cell line	Organ of origin; controlled terms 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					
CL:12	CL_Tissue	canonical cell line	Tissue of origin; A controlled vocabulary describing the tissue from which the cell line was derived	1	Some histology information might be provided in this field.	UBERON, possibly CARO	http://bioportal.bioontology.org/ontologies/1404		cell_source_organ	CL:organ	Source Organ	Organ
CL:13	CL_Cell_Type	canonical cell line	A controlled vocabulary describing the cell type from which a cell line was derived; e.g. epithelial like, fibroblast-like, lymphoblast like, hematopoetic, 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		CL:histology		
CL:14	CL_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				
CL:15	CL_Disease	canonical cell line	If the cell line 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	cell_source_disease	CL:disease; CL:type		Histology
CL:16	CL_Disease_Detail	canonical cell line	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	to be developed; initially free text		may initially require free text				
CL:17	CL_Growth_Properties	canonical cell line	A controlled vocabulary describing the growth properties of the cell line (e.g. adherent, suspension)	1		BAO with imports from CLO and OBI (needs development) BAO/'cell line specification'/'cell line culturing'	http://bioportal.bioontology.org/ontologies/1533	Cell line culturing	cell_growth_type	CL:growth properties		Growth Properties
CL:18	CL_Genetic_Modification	canonical cell line	Stable transfection or viral transduction. If yes, the modifications (e.g. expressing GFP-tagged protein) should be described and appropriate references provided. This requires a number of fields including the parental cell line	1	MIACA is minimal information that may be a guidance; requires more fields to define modifications using controlled terms	BAO and imported CLO terms (needs more work) BAO/'cell line specification'/'cell line modification' BAO/'cell line specification'/'immortalized' BAO/'cell line specification'/'transfection attributes'	http://bioportal.bioontology.org/ontologies/1533	If modified, need to capture corresponding parental cell line (by ID / name); capture if stable or transient modification; are there stable non-genetic modifications; e.g.infection of fusion? MIACA may provide additional guidance what details to capture; Cell line modification: genetic modification: transfection: stable transfection; Cell line modification: genetic modification: viral transduction				
CL:19	CL_Related_Projects	canonical cell line	Other projects in which the cell line has been studied / used; A controlled vocabulary describing other large scale projects in which the cell line has been used (e.g. ENCODE, TCGA, ICBP, Epigenomics, etc.)	2	Needs defined project codes	to be developed if needed		Include this in the CL database	cell_shared_projects			
CL:20	CL_Recommended_Culture_Conditions	canonical cell line	A description of the standard tissue culture conditions (media, supplements, culture dish treatment) used to maintain the cell line. 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_CL: 2	BAO with imports from CLO and OBI (needs development) BAO/'cell line specification'/'cell line culturing component'	http://bioportal.bioontology.org/ontologies/1533	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')				CMT Medium
CL:21	CL_Verification_Profile	cell line batch	Information pertaining to experimental verification of the cell line identity; batch-specific ID; STR profiling	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 lines within LINCS are the same – either by STR / SNP profiling or by actually exchanging vials previously matched to repository.	reference to ATCC; NIST and possibly CLO (in the future)		Cell line verification or DNA profile (ATCC uses this term); should link to references available at ATCC and in the future NIST and possibly CLO		CL:Validation-Comment		

LINCS standardized cell line information

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CL:22	CL_Verification_Reference_Profile	canonical cell line	expected STR (reference) profile of the cell line based on provider information, if available	2	from cell line provider / reference			reference once NIST NCBI Cell DB exists				
CL:23	CL_Mutations_Reference	canonical cell line	Mutations inherent in certain cell lines; from a reference	1	Known mutation in cell line from a reference; needs to include the reference source and the reference to the specific cell	COSMIC; possible other database of cell line mutations	http://www.sanger.ac.uk/genetics/CGP/cosmic	reference to cell line inherent mutations				
CL:24	CL_Mutations_Explicit	canonical cell line	Mutations inherent in cell line, captured explicitly; e.g. if reference is not available	2	Needs some ontology to describe gene / protein and mutation; at this point we suggest a concatenation of UniProt / Gene symbol and code of mutation	UniProt standard symbol and mutation code (difference from wild type)	http://www.uniprot.org/	UniProt ID, standard symbol and code for mutation; may consider PRO; consider modeling in BAO	cell_known_mutations			
CL:25	CL_Organism_Gender	canonical cell line	Whether cell line was obtained from a male or female subject	2	male, female, or genderless; OBI	allowed entries: male, female, genderless		OBI: Quality: biological sex	cell_source_gender			Patient Gender

LINCS experimental cell line related information (experiment specific treatment of cell lines)

Unique ID	LINCS Field Name	Related to	Description	Importance (1: essential; 2: desirable / recommended; 3: optional)	Comments	Possible Ontologies (in work)	Link to ontology / reference	Additional Notes (for development) [Notes]
EXP_CL:1	CL_Culture_Conditions	cell line batch	Actual culture conditions used for the cell line in the context of the reported experiment / assay	1	These are the actual culturing conditions; free text for now?	BAO with imports from CLO and OBI (needs development) BAO/'cell line specification'/'cell line culturing' BAO/'cell line specification'/'cell line culturing component'	http://bioportal.bioontology.org/ontologies/1533	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 line culturing component: culture medium; Cell line culturing component: assay medium
EXP_CL:2	CL_Transient_Modification	cell line batch	Transient transfection or viral transduction	1	need to capture transfection agent	BAO and imported CLO terms (needs more work) BAO/'cell line specification'/'cell line modification' BAO/'cell line specification'/'immortalized BAO/'cell line specification'/'transfection attributes'	http://bioportal.bioontology.org/ontologies/1533	probably need to be split into several fields; Cell line modification: genetic modification: transfection; Cell line modification: genetic modification: transient transfection; Cell line modification: genetic modification: viral transduction

Additional center specific cell line fields captured by the respective groups; not standardized or mapped (yet); kept as placeholder to refer back to the original fields; not required for LINCS standard fields

Broad	Mitchison mitosis-apoptosis	MGH LINCS	MGH cell database (Cyril Benes)
num			
cell_type			
cell_lincs_status			
cell_doubling_time			
affx_cel			
cell_comment			
cell_vendor_url			
cell_cosmic_url			
	CL:suggested by		
	CL:comment		
	CL:receptors		
	CL:LINCSOrigin		
	CL:Validation-Date		
			BioSafetyLevel
			CatalogNumber
			DataVerified
			Date Acquired
			ID
			OrderInfo
			Patient Race
			ProductDocumentation
			ProductInfo
			Recommended Medium