

PRIM-TECH3R

Standards for mouse stem cell use in CIVM development

Deliverable 1.1

Dissemination level: Public

WP1

**Standardised isolation of relevant mouse cells and pilot
mouse biobanking**



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Introduction

In recent years, technological advances in microfluidics, 3D bioprinting and multicellular co-culture systems have enabled the emergence of Complex In Vitro Models (CIVMs), providing complementary alternatives to animal models for studying tissue / organ-level functions. However, their widespread adoption is constrained by high inter-laboratory variability, limited protocol harmonisation and heterogeneous cell sourcing, which compromise robustness, reproducibility and data comparability. A major source of variability lies in the insufficient standardisation of the origin, derivation, characterisation and handling of precursor mouse cells.

Within “Preclinical in vitro Models for the Replacement, Reduction and Refinement of Mouse Models in Preclinical Studies (PRIM-TECH3R)”, WP1 addresses this limitation by establishing rigorous and harmonised standards for the isolation, characterisation, differentiation and biobanking of mouse-derived cells used in CIVMs. In accordance with the Reduction principle of the 3Rs, isolated mouse cells are systematically banked to maximise reuse and minimise additional animal experimentation, making traceability, quality control and controlled downstream use essential to the project’s scientific and ethical goals.

While the International Society for Stem Cell Research (ISSCR) has defined quality standards for human pluripotent stem cells, no equivalent framework exists for mouse cell types despite their central role in preclinical research. Deliverable D1.1 (“Standards for mouse stem cell use in CIVM development”) aims to fill this gap. Given that the PRIM-TECH3R biobank includes embryonic, primary and immortalised murine cell types, D1.1 was expanded to provide comprehensive recommendations for cell characterisation, reporting and use, thereby enhancing consistency, interoperability and reproducibility across laboratories and CIVM applications.

Methodology

The methodological approach was designed to ensure transparency, reproducibility, and comprehensive coverage of recommendations for cell culture and cell line use. The activities were structured in sequential steps, as detailed below.

- 1) **Preliminary Review and Compilation of Existing Guidelines.** ICS initiated the work with a comprehensive review of existing cell culture and cell line recommendations, which included ISSCR guidance for human pluripotent stem cells. To ensure broader applicability and identify gaps, additional guidance was consulted like Good Cell Culture Practice (GCCP 2.0); Organization for Economic Cooperation and Development (OECD) Test Reporting Guidelines, including Guidance Document on Good In Vitro Method Practices (GIVIMP); Guidance for Good In Vitro Reporting Standards (GIVReSt); and the European HYBRIDA project, notably the “Minimal Information About an *Organoid* and its Use” (MIAOU) questionnaire for Pluripotent Stem cells (PSC)-derived organoids. Building on this review and based on critical steps in established isolation



protocols, we developed specific recommendations for mouse embryonic stem cells (mESC). Relevant items were either adopted directly or adapted to meet mESC-specific requirements.

- 2) **Organization and Structuring of Recommendations.** To enhance clarity and usability, all recommendations were organized in an Excel spreadsheet. This table format enables (1) the collection of precise answers through defined questions, (2) rapid verification that all mandatory items are completed, and (3) improved searchability of appropriate cell lines for future users of the PRIM-TECH3R database.
- 3) **Iterative Review.** A first draft of the general recommendations was circulated in October 2025 within a small working group comprising UKRI, UOULU, CIPHE, HMGU, and ICS. Contributors were asked to review, amend, and correct the document. In parallel, a focused working group addressing mESC validation—composed of HMGU, NKI, UOULU, CNR, and ICS—reviewed the validations performed at each centre and finalized a list of common recommendations for mESC validation.
- 4) **Finalization and Consensus.** During the first two weeks of January 2026, the final Excel document was shared with all contributing centres. Each centre evaluated the recommendations, ensuring consensus and applicability across institutions.

Results

Our recommendations are designed to be relevant for all CIVMs in PRIM-TECH3R and, potentially, for all types of mouse cells. Their purpose is not to impose unnecessary validations, but to provide clear guidance for collecting and reporting critical information, thereby supporting reproducibility and experimental success.

The recommendations are compiled in an Excel file with four sheets, each containing multiple lines describing specific aspects of a mouse cell line:

1. **Sheet 1 – Vocabulary:** Defines key terms to ensure consistent understanding among all users.
2. **Sheet 2 – Cell Line Information:** Key information to be completed for each new submission to the PRIM-TECH3R biobank. It is relevant for any mouse cell line, although specific recommendations and required levels (defined in Sheet 1) vary depending on the cell type (embryonic stem cells, primary cultures, or immortalized cells), and some entries may remain blank. This sheet covers:
 - Overview of the cell line for rapid identification
 - Cell line characterization
 - Donor information
 - Isolation/derivation protocols
 - Culture conditions
 - Key parameters to monitor
 - Master and/or daughter cell bank details



D1.1 Standards for mouse stem cell use in CIVM development

Columns are structured as follows: Columns A & B describe the point requiring an answer, Column C clarifies the request with examples or guidance, and the remaining columns indicate the cell type, as reporting recommendations may differ. (*A column for recording the response may be added separately.*)

3. **Sheet 3 – Genetic Engineering:** Records any genetic modifications performed to introduce or correct mutations or to immortalize a cell line. If no such experiments have been performed, the information specified in this sheet does not have to be filled.
4. **Sheet 4 – Protocols and Usage:** Collects key procedural steps for proper use of the cell line under different scenarios:
 - *In vitro* differentiation to another cell type
 - *In vitro* co-culture
 - *In vivo* injection

This structured format ensures that all critical information is systematically captured, facilitating reproducibility, transparency, and efficient use of the PRIM-TECH3R biobank.

Discussion and next steps

While these recommendations will initially be applied internally within the PRIM-TECH3R consortium, our goal is for any researcher isolating or deriving a new mouse line to be able to use them. The guidelines will thus be published on the PRIM-TECH3R website. Subsequently, the White Paper describing *in vitro* resources of INFRAFRONTIER, BBMRI, and EUBI (deliverable D4.4) will publicize these D1.1 guidelines.

Link to other deliverables and milestones

Deliverable number	Deliverable title	Remarks
D1.2	Collection of standardized protocols for the isolation and differentiation of stem cells and primary cells for CIVMs	The standardised protocols will be written according to D1.1 guidelines, in particular ensuring that all mandatory items are enough described.
D1.3	Biobanking best practice guidelines for mouse cell biobanks	This deliverable will use the recommendations made in D1.1 to collect relevant information on submitted cell lines
D4.4	White Paper on a shared <i>in-vitro</i> resource of INFRAFRONTIER, BBMRI and EUBI	This white paper will make publicity/cite D1.1 guidelines so



		that they could be followed by any scientist.
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List of references

Andreescu I, Baertschi B, Chneiweiss H, Dubart-Kupperschmitt A, Gaillard M, Galzi JL, Haiech J, Sebastiani C *The Essential Guide to Implementing Responsible and Reproducible Research on Organoids: MIAOU, ECHOES, and RICOCHECK*,
https://hpscreg.eu/docs/downloads/MIAOU_ECHOES_RICOCHECK_Final.pdf

CEN/CENELEC FGOoC (2024) Focus Group Organ-on-Chip Standardization Roadmap,
<https://www.cencenelec.eu/media/publication-july-2024-fg-ooc-roadmap.pdf>

Lovell-Badge, Robin et al. (2021) ISSCR Guidelines for Stem Cell Research and Clinical Translation: The 2021 update Stem Cell Reports, Volume 16, Issue 6, 1398 - 1408

Mohapatra R, Leist M, von Aulock S and Hartung T, (2025) Guidance for Good In Vitro Reporting Standards (GIVReSt) – A draft for stakeholder discussion and background documentation, *ALTEX* 42(3), 376-396. doi:10.14573/altex.2507041

OECD (2018), *Guidance Document on Good In Vitro Method Practices (GIVIMP)*, *OECD Series on Testing and Assessment*, No. 286, OECD Publishing, Paris. <https://doi.org/10.1787/9789264304796-en>

Pamies D, Leist M, Coecke S, Bowe G, Allen DG, Gstraunthaler G, Bal-Price A, Pistollato F, de Vries RBM, Hogberg HT, Hartung T, Stacey G. Guidance document on Good Cell and Tissue Culture Practice 2.0 (GCCP 2.0). *ALTEX*. 2022;39:30-70. doi: 10.14573/altex.2111011. Epub 2021 Dec 9. PMID: 34882777.



Criteria

Mandatory Experiment

Mandatory Information

Recommended

Not applicable / not relevant

Definition

Not only must this item be filled, but the corresponding experiment is also mandatory for a proper cell line description.

It is mandatory to report whether or not this information exists or whether or not the experiment was performed, but performing it is

Performing the experiment or providing the information is advised but not strictly required

The item does not apply in this context.

Thematic	Item	Example / Remarks	Embryonic Stem Cells (ESC)	induced Pluripotent Stem cells (iPSC)	Multipotent stem cells	primary culture	immortalized cells
General Information	Cell Line Generation Summary: Brief overview of the process used to create the cell line.	Few sentences that describe the cell and its mutations. Like what is done on MGI for mutations details.	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information
General Information	Cell Type(s): Inferred or observed cell type(s).	Embryonic Stem cells (ESC), Neuronal precursor, Neuron, Fibroblast, ...	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information
General Information	Test Used for Cell Type(s): Assays or methods used for cell type verification. Please describe	please indicate marker(s) name and technic(s) used (Reverse transcribed PCR (RT-PCR), Immunofluorescence (IF), ...) or if inferred based on morphology, protocol used, ...	Mandatory Experiment	Mandatory Experiment	Mandatory Experiment	Recommended For some applications only	Recommended For some applications only
Information on the Donor Used to Derive or Isolate the Cells	Source Definition: Clearly define the origin of the donor.	Existing cell line, lived animals including embryos	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information
Information on the Donor Used to Derive or Isolate the Cells	Organism: Specify the species	Mouse, rat, ...	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information
Information on the Donor Used to Derive or Isolate the Cells	Line Identifier: Unique ID or name for the donor line.	MGI if mouse line, ATCC if Cell line, ...	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information
Information on the Donor Used to Derive or Isolate the Cells	Genetic Background: Describe the genetic strain or background.		Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information
Information on the Donor Used to Derive or Isolate the Cells	Method for Genetic Background Assessment: How the genetic background was determined (e.g., Short tandem Repeat (STR) profiling, MiniMUGA, sequencing).		Recommended	Recommended	Recommended	Recommended	Recommended
Information on the Donor Used to Derive or Isolate the Cells	Age or Passage: Age of the donor at cell isolation or cell passage number of mother cell line when starting genetic engineering.	if isolation of cells from lived animal or embryo, please indicate the age of the donor (i.e. E3.5, P2, 3 weeks, 2 months, ...). If the cell line is a modification of an already reported cell line, please indicate passage number of the "mother cell line".	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information
Information on the Donor Used to Derive or Isolate the Cells	Tissue: Type and location of tissue used.	i.e. inner cell mass, ear punch, tail, dorsal skin fibroblasts, ...	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information
Information on the Donor Used to Derive or Isolate the Cells	Information on donor animals that may impact the cells	medical treatment and any special treatment of the mouse before the sample collection, special diet, medication, health status of the mouse, e.g. disease type, statement of health, suitability	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information
Derivation / Isolation	Method for Tissue Dissociation: Technique used to dissociate tissue (e.g., enzymatic, mechanical).	i.e. collagenase (xx mg/ml)/dispase (xx mg/ml) treatment for xx minutes, Trypsin (xx %) for xx minutes, at XX degrees...	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information
Derivation / Isolation	Derivation/Isolation Protocol: Full protocol used to derive/reprogram or isolate the cells. Provide a detailed protocol, or refer to a freely accessible publication that outlines all required steps.		Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information
Characterization of the Cell Line	Sex: Biological sex of the generated cell line.	Male, Female, Unknown, Other	Mandatory Experiment	Mandatory Experiment	Mandatory Experiment	Mandatory Information	Mandatory Information
Characterization of the Cell Line	Karyotyping: Was karyotyping performed?	yes or no	Mandatory Experiment	Mandatory Experiment	Mandatory Experiment	Recommended For some applications only	Recommended For some applications only
Characterization of the Cell Line	Karyotyping Method: Method used (e.g., G-banding, spectral karyotyping; digital PCR, Giemsa staining).	rough assessment of Chromosome morphology, G-banding, Bionano, whole genome sequencing, ddPCR, ...	Mandatory Information	Mandatory Information	Mandatory Information	Recommended	Recommended
Characterization of the Cell Line	Karyotyping result	please describe the data of your karyotyping experiment: which chromosomes have been covered and what was the result of each.	Mandatory Information	Mandatory Information	Mandatory Information	Recommended	Recommended
Characterization of the Cell Line	Karyotyping Passage(s): Passage(s) at which karyotyping was performed.		Mandatory Information	Mandatory Information	Mandatory Information	Recommended	Recommended
Characterization of the Cell Line	Genetic Background of the Cell Line: Confirmed genetic background of the cell line.	may be different in case of mixed background	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information
Characterization of the Cell Line	Genetic Background Method: Technique used (e.g., STR profiling, MiniMUGA, Mendelian analysis).		Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information
Characterization of the Cell Line	Genetic Markers for Cell Type Identification: Markers used to verify cell identity.	e.g. Oct 4, Nestin, Vimentin, PDGF-a, Enolase 2 ...	Mandatory Information	Mandatory Experiment	Mandatory Information	Mandatory Information	Mandatory Information
Characterization of the Cell Line	Did you challenge the cell line to differentiate? If yes please described your protocol	e.g. differentiation in embryonic bodies, ability to contribute to the germ line when injected into a host blastocyst; for neuronal precursor, ability to differentiate into neurons	Recommended	Mandatory Experiment	Recommended	Mandatory Information	Mandatory Information
Characterization of the Cell Line	If you performed embryoid bodies, which markers and technique did you use to validate that the EB are composed of cells from the 3 embryonic layers?	for each embryonic layer, please indicate markers checked, and among those markers which were expressed and the techniques used (IF? RT-PCR?) or any other technique used to validate the presence of cells from the 3 layers;	Mandatory Information	Mandatory Experiment	Not applicable/ not relevant	Not applicable/ not relevant	Not applicable/ not relevant

Characterization of the Cell Line	Additional Analysis & Data Accessibility: Any other characterization and whether the data are publicly available.	Please describe here what else did you perform to characterize/validate the cell line.	Recommended	Recommended	Recommended	Recommended	Recommended
Characterization of the Cell Line	Bank Characterized: Indicate whether the cell bank was characterized.	Master, Working or both	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information
Conditions for Culturing the Established Cell Line	Biosafety: Biosafety level and handling precautions.		Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information
Conditions for Culturing the Established Cell Line	Adherent or Floating: Growth behavior of the cells.		Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information
Conditions for Culturing the Established Cell Line	Culture Medium Composition: Full composition of medium, including source, reference number and concentration of supplements (e.g., glucose, serum, antibiotics, growth factors).		Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information
Conditions for Culturing the Established Cell Line	Culture Medium Composition: case of the serum. If relevant, please described any treatment either applied by you or the provider.	i.e. serum heat inactivated by the provider, 15 min in a 65°C preheated water bath, no treatment, ...	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information
Conditions for Culturing the Established Cell Line	Nature and Treatment of Supports: Type of substrate (e.g., feeders, gelatin, fibronectin) and any pretreatment.		Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information
Conditions for Culturing the Established Cell Line	Seeding Conditions: Seeding density (per cm ² or per mL).	if adherent cells, please indicate the seeding density per cm ² . If floating cells, please indicate the seeding density per ml	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information
Conditions for Culturing the Established Cell Line	Final cell density	if adherent cells, please indicate the final cell density per cm ² . If floating cells, please indicate the final cell density per ml	Recommended	Recommended	Recommended	Recommended	Recommended
Conditions for Culturing the Established Cell Line	Additional Helpful Information for Cell Culture	Any other relevant information like cell population doubling time, time to reach confluency, survival rate	Recommended	Recommended	Recommended	Recommended	Recommended
Conditions for Culturing the Established Cell Line	CO₂/O₂ Concentration, Temperature: Environmental conditions for culture.		Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information
Conditions for Culturing the Established Cell Line	Frequency of Media Changes: How often medium is replaced.	please indicate as well if it a full replacement or if only x % of the medium is renewed.	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information
Conditions for Culturing the Established Cell Line	Passaging Method: Technique used for subculturing.		Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information
Key Parameters to Monitor	common features of the line	please describe the normal morphology of the cell line, or any features important to look at	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information
Key Parameters to Monitor	Picture at Low Density: Image showing cell morphology at low confluence.		Recommended	Recommended	Recommended	Recommended	Recommended
Key Parameters to Monitor	Picture at High Density: Image showing morphology at high confluence.		Recommended	Recommended	Recommended	Recommended	Recommended
Key Parameters to Monitor	Healthy culture phenotype: Critical conditions or signs to ensure healthy culture.	please describe what to avoid to maintain a healthy culture: i.e. waiting up to confluency or not, no single cell culture, ...	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information
Key Parameters to Monitor	Stress phenotype: what are the signs of stress of this cell line?	please described	Recommended	Recommended	Recommended	Recommended	Recommended
Information on Master & Working Cell Banks	Freezing Conditions: Protocol and cryopreservative used.		Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information
Information on Master & Working Cell Banks	Thawing Conditions: Procedure for recovery of frozen cells.		Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information
Information Specific to Master Cell Bank	Passage at Freezing: Passage number when master bank was created.		Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information
Information Specific to Master Cell Bank	Sterility Validation of the master cell bank: Testing for contaminants (e.g., mycoplasma, adventitious agents).	please clearly indicate which contaminant you specifically look at and how (method used, reference number of the kit/provider). What was the result for each contaminant	Mandatory Experiment	Mandatory Experiment	Mandatory Experiment	Mandatory Experiment	Mandatory Experiment
Information Specific to Master Cell Bank	Treatments Before Freezing in master cell bank: Any antimicrobial or antifungal treatments applied; specify agents, duration, and reason.		Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information
Information Specific to Master Cell Bank	Storage Conditions: Temperature and system used for storage (e.g., liquid nitrogen).		Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information
Information Specific to Working/Daughter Cell Bank	Passage at Freezing of working cell bank: Passage at which the working bank was frozen.		Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information	Mandatory Information
Information Specific to Working/Daughter Cell Bank	Sterility Status of the working cell bank: Mycoplasma/adventitious agent testing results.		Mandatory Information	Mandatory Information	Mandatory Information	Recommended For some applications only	Mandatory Information
Information Specific to Working/Daughter Cell Bank	Storage Conditions: Temperature and system used for storage (e.g., liquid nitrogen).		Recommended	Recommended	Recommended	Recommended	Recommended

Thematic	Item	Example / Remarks	all cells if genetic engineering has been applied
Engineering of Derived Cells	did you perform genetic engineering, or apply immortalization techniques?	if no, please skip this sheet. If yes please answer following questions	Mandatory Information
Engineering of Derived Cells	Summary of genetic engineering: please described why did you performed genetic engineering	i.e. introduce the XX mutation to mimic XXXX, immortalize the cell line (how?), ...	Mandatory Information
Engineering of Derived Cells	Clonal or Not Clonal: Were cells cloned post-editing?	Yes/no	Mandatory Information
Engineering of Derived Cells	Donor Type: Type of genetic donor	e.g. plasmid, viral vector, ...	Mandatory Information
Engineering of Derived Cells	Donor type: details	Please provide details/references for plasmids/vectors used.	Mandatory Information
Engineering of Derived Cells	Full Donor Sequence & Mutation Details: Complete sequence and mutation description.		Mandatory Information
Engineering of Derived Cells	Engineering Method: Specify the technique(s) used to introduce genetic modifications (e.g., CRISPR/Cas9, electroporation, lipofection, selection using a genetic marker, viral transduction, etc.).		Mandatory Information
Engineering of Derived Cells	Selection Method: How modified cells were selected (e.g., antibiotic resistance, sorting using a genetic marker, ..).		Mandatory Information
Engineering of Derived Cells	On-Target Analysis: How correct editing was confirmed.		Mandatory Experiment
Engineering of Derived Cells	Off-Target Analysis: Description of whether and how off-target effects were assessed.	Please describe	Mandatory Information
Engineering of Derived Cells	Donor Stability in Cells: Is the inserted donor stable (e.g. episome) over time/passages?		Mandatory Information
Engineering of Derived Cells	Estimated Passages from Editing to Banking: Number of passages between editing and creation of the master bank.		Mandatory Information

Thematic	Item	Example / Remarks	any cells if thematic is relevant to your use
Protocol for Experimental Use of the Cell Line	Passages: Please provide accepted passage numbers for performing the experiment		Recommended
Protocol for Experimental Use of the Cell Line	Check point: what do you check on your working batch when launching the experiment	Karyotype, morphology, division speed, ...	Mandatory Information
Protocol for Experimental Use of the Cell Line	Cell Line Objective(s)	Differentiation into Another Cell Type, in vitro Co-Culture, in vivo injection	Mandatory Information
Cell Line Intended for in vitro Differentiation into Another Cell Type	Target Cell Type: Specify the intended differentiated cell type.		Mandatory Information If Corresponding Application
Cell Line Intended for in vitro Differentiation into Another Cell Type	Matrix Requirement: Is a matrix required for differentiation?	Yes / No	Mandatory Information If Corresponding Application
Cell Line Intended for in vitro Differentiation into Another Cell Type	Matrix Composition: Specify the type of matrix used (e.g., Matrigel, hydrogels, hyaluronic acid, laminin, etc.)	Please provide as well reference number	Mandatory Information If Corresponding Application
Cell Line Intended for in vitro Differentiation into Another Cell Type	Matrix Composition: Specify the concentration of the matrix.		Mandatory Information If Corresponding Application
Cell Line Intended for in vitro Differentiation into Another Cell Type	Matrix Preparation Method: Describe how the matrix is prepared.		Mandatory Information If Corresponding Application
Cell Line Intended for in vitro Differentiation into Another Cell Type	Differentiation Protocol: Provide a detailed, step-by-step differentiation protocol, or refer to a freely accessible, peer-reviewed publication that includes the full procedure.		Mandatory Information If Corresponding Application
Cell Line Intended for Use in in vitro Co-Culture	Co-Cultured Cell Line(s): Specify which other cell line(s) are used in co-culture.		Mandatory Information If Corresponding Application
Cell Line Intended for Use in in vitro Co-Culture	Co-Culture Setup: Describe the sequence of co-culturing and any adaptations made to the culture media to support both cell types.		Mandatory Information If Corresponding Application
Cell Line Intended for Use in in vitro Co-Culture	Co-Culture Protocol: Provide a detailed co-culture protocol, or refer to a freely accessible publication that outlines all required steps.		Mandatory Information If Corresponding Application
Cell Line Intended for in vivo injection	injection host: please provide information on host (species, strain, age)		Mandatory Information If Corresponding Application
Cell Line Intended for in vivo injection	injection site & route: please indicate injection site & route	Injection route, any tips? What is the type of syringe you use?	Mandatory Information If Corresponding Application
Cell Line Intended for in vivo injection	number of cells: please indicate number of injected cells per injection	please indicate what is really injected per animal (do not count the 'dead volume' which remains in the syringe/tip and that does not make it to the animal.)	Mandatory Information If Corresponding Application
Cell Line Intended for in vivo injection	injection medium: please indicate injection medium, including if relevant, injection matrix		Mandatory Information If Corresponding Application
Cell Line Intended for in vivo injection	injection volume: please indicate injection volume	please indicate what volume is really injected per animal. You may want to indicate as well the 'dead volume' which remains in the syringe/tip and that does not make it to the animal.	Mandatory Information If Corresponding Application