Part B – Health Facility Briefing & Design

279 Stem Cell Unit

iHFG

International Health Facility Guidelines

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20 Stem Cell Unit

1 Introduction

Description

The Stem Cell Unit will provide facilities for extracting, processing, and preserving stem cells from human body for potential future use in stem cell therapies and treatments. Stem cells are the foundation of development in living organisms including humans.

In humans, there are many different types of stem cells that come from different places in the body or are formed and developed at various stages in humans' lives. These include embryonic stem cells that exist only at the earliest stages of development and various types of tissue-specific (or adult) stem cells that appear during foetal development and remain in our bodies throughout life. Stem cells have two major characteristics:

- Self-renewal: the ability to go through numerous cycles of cell growth and cell division, known as cell proliferation, while maintaining the undifferentiated state.
- Potency: the capacity to differentiate into specialized cell types.

Stem Cells have the power to transform into any tissue or organ in the body. It is due to this unique characteristic that they have the potential to treat over 80 proven life-threatening conditions.

The primitive stem cells located in the organs of foetuses are referred to as foetal stem cells.

There are two types of foetal stem cells:

- Foetal proper stem cells come from the tissue of the foetus proper and are generally obtained after an abortion. These stem cells are not immortal but have a high level of division and are multipotent.
- Extraembryonic foetal stem cells come from extraembryonic membranes and are generally not distinguished from adult stem cells. These stem cells are acquired after birth, they are not immortal but have a high level of cell division and are pluripotent.

Adult stem cells are stem cells which maintain and repair the tissue in which they are found. They can be found in children, as well as adults.

Autologous adult stem cells in humans can be found in the following sources:

- Bone marrow, typically extracted from pelvic bones via surgery.
- Adipose tissue (fat cells), typically extracted via liposuction.
- Blood, which needs to be extracted through a process called apheresis, in which the donor's blood is taken and then run through a machine that removes the stem cells while returning the rest of the blood to the donor.

Low temperature freezing technology is used in stem cell units to preserve stem cells' biological characteristics for 20 to 30 years while protecting them against contamination and deterioration.

2 Functional and Planning Considerations

Operational Models

Service delivery models for a Stem Cell Unit could be one of the following:

- Located within a Hospital where some of the Support Areas and Staff Areas may be shared with another adjacent unit. Specimen deliveries may occur any time of the day from an external facility or within the hospital.
- As an independent facility with its own support areas and staff areas and not connected with other types of facilities. The Unit in a stand-alone facility must include all the support areas, staff areas and the required plant area.

Hours of Operation

A Stem Cell Unit generally operates 7 days a week, from 7am to 7pm. In hospitals, 24-hour service is highly recommended; in any other situation, 24-hour operation is permitted. The exact hours of operation should be determined by the Operational Policy.

Planning Models

The Stem Cell Units are usually developed as a relative compact and self-sufficient facility. However, they may also be located in a “restricted zone” of a hospital. If the facility is remote from a hospital, considerations should be given to the travel distance from the loading area, after-hours access, and security protocols especially if external deliveries are accepted.

Functional Areas

The Stem Cell Units may consist of a number of Functional areas or zones:

- **Entry/ Reception area** including:
  - Reception (for receiving specimen)
  - Bay – Refrigerators (optional)
  - Storage for files and stationery
- **Laboratories and Support areas** consisting of:
  - Tissue Culture Laboratory (Clean Room)
  - Molecular Biology Laboratory (Clean Room)
  - Microscopy Laboratory
  - Low Temperature Freezers Storage Room
  - Liquid Nitrogen Storage Room (Cryogenic Store)
  - Emergency shower and eyewash station, located with ready access to all processing areas.
  - Research and Development Laboratory (optional)
  - Store Rooms – for chemical, reagents, kits etc.
- **Staff areas** including:
  - Meeting Room
  - Offices
  - Staff Room
  - Storage for files and stationery
  - Change rooms with toilets, shower, and lockers

Access to surgical facilities is required for the collection and transfer of Stem Cells as required for the treatment. Such facilities are not covered in this FPU. For Surgical facilities refer to the Operating Unit FPU within these Guidelines.

The above zones are briefly described below.

Entry/ Reception Area

The reception is the receiving hub of the unit and should therefore ensure the security of the entire Unit through access control. The reception may be used for the registration of expectant mothers;

alternatively, this can occur at the Staff Station within the Birthing Suite, according to Operational Policy. Good access from Reception to the nursing administration offices and education areas is beneficial.

Patients, their supporters and members of the public will need to have good access to amenities including separate male/ female toilet facilities, prayer rooms (a minimum of 1 prayer room per gender, per floor) and waiting areas. A separate waiting area for families should be provided, preferably with a small play area for children.

A Consult/ Interview room may be included for private discussions with patients and families.

The Specimen Reception is the receiving hub of the Unit and may be used to control the security of the Unit. The reception area is where specimens for analysis are received, registered, and held temporarily before despatch into laboratory areas. Specimens may be received through couriers (from outside the facility) or delivered by staff (in the same facility). The area will require specimen registration facilities which may include computerised/ barcode systems, sorting benches and a holding area for specimens including refrigerated holding if required. Following registration, specimens are transported to the relevant laboratory or area for processing and storage.

Laboratory & Support Areas

Laboratories will be provided according to the service plan of the facility where the key areas are clean rooms.

The specimen workflow proceeds in an orderly path from Reception to registration, initial processing, and then to specific laboratories for analysis, cell extraction and storage. The laboratory planning requires consideration of the following:

- Laboratory workbenches with space for equipment such as microscopes, analysers, incubators, and centrifuges.
- Access to vacuum, gas, and electrical services at the workbench
- Sinks with hot and cold water; may be used for the disposal of non-toxic fluids
- Hand basin with paper towel and soap fittings for staff handwashing
- Emergency shower and eye flushing devices, with drainage to a separate holding area

Note 1: The size of the laboratory needs to be appropriate to the function and provide a safe working environment.

Note 2: Collection of Stem Cells will take place at a procedure room or operating room inside a hospital, and specimen will be brought to Stem Cell Unit for processing and storage.

Laboratory areas include the following:

- **Tissue Culture Laboratory** – a clean room where tissues and cells are transferred to an artificial environment (separate from the parent organism) so they can continue to grow. Cells in culture may divide, change their shape, size, or function. A pass-through hatch may be provided between this and the adjacent Molecular Biology Laboratory. Noting correct pressurisation must be maintained if pass-through hatches are provided.
- **Molecular Biology Laboratory** – A clean room which plays a major role in understanding the physiology of the cell and its biological activities at a molecular level.
- **Microscopy Laboratory** - where samples and objects are being viewed “that are not within the resolution range of the normal eye” using different types of microscopes.
- **Low Temperature Freezers Storage Room** where low temperature freezers (-30 deg) or ultra-low temperature freezers (-80 deg) are provided.
- **Liquid Nitrogen Storage Room (Cryogenic Store)** used for long-term storage and preservation of biological samples by using a cryogen such as Liquid Nitrogen as a storage medium. Nitrogen is cooled and pressurized into a liquid state creating a medium with extremely low boiling point of -196 deg.
- **Culture Media** can be produced on-site or delivered as ready-made kits. Media washing room, media preparation room, and/ or media storage room may be required depending on the operational policy of the unit.
- **Emergency Shower and Eyewash Station**, located with ready access to all processing areas. More than one station may be required depending on the size and arrangement of

the laboratory areas.

- **Support Areas –** includes stores, clean-up rooms, sterilisation room for laboratory instruments, disposal, cleaner's room etc.
- **Research and Development Laboratory** (optional) for conducting further research and investigation on stem cells. When provided, they can be collocated with the Core Laboratory areas and may even share support areas where possible.

Staff Areas

Offices or workstations will be required for routine clerical/ administrative procedures, located outside the laboratory areas.

Offices for the Manager/ Supervisors should be located in a staff accessible area away from the laboratory areas within the Unit; visitors to offices should not transit through laboratory areas. The provision of offices will depend upon the size of the Unit. An area for storage of stationery and files should be provided.

Access to a Meeting Room will be required for staff meetings and training purposes, which may be shared with an adjacent unit.

A staff room will be required for staff meals and refreshments and also provide for staff on duty after-hours.

Change areas for staff will include toilets, showers, handbasins and lockers. All technical staff working in this Unit must wear personal protective clothing and equipment, including laboratory coats, and eye protection in specimen processing areas.

3 Functional Relationships

External

The Unit will require ease of receiving specimen from outside the facility or within a hospital facility.

The principal relationships with other Units include:

- Loading Dock (for external specimen deliveries)
- Operating Unit or Day Surgery/ Procedures Units (if inside a hospital)
- Birthing Unit and Neonatal Nurseries (if inside a hospital)
- Waste Management (if inside a hospital)
- Access through a staff/ service corridor for Supplies and Housekeeping including waste.

Internal

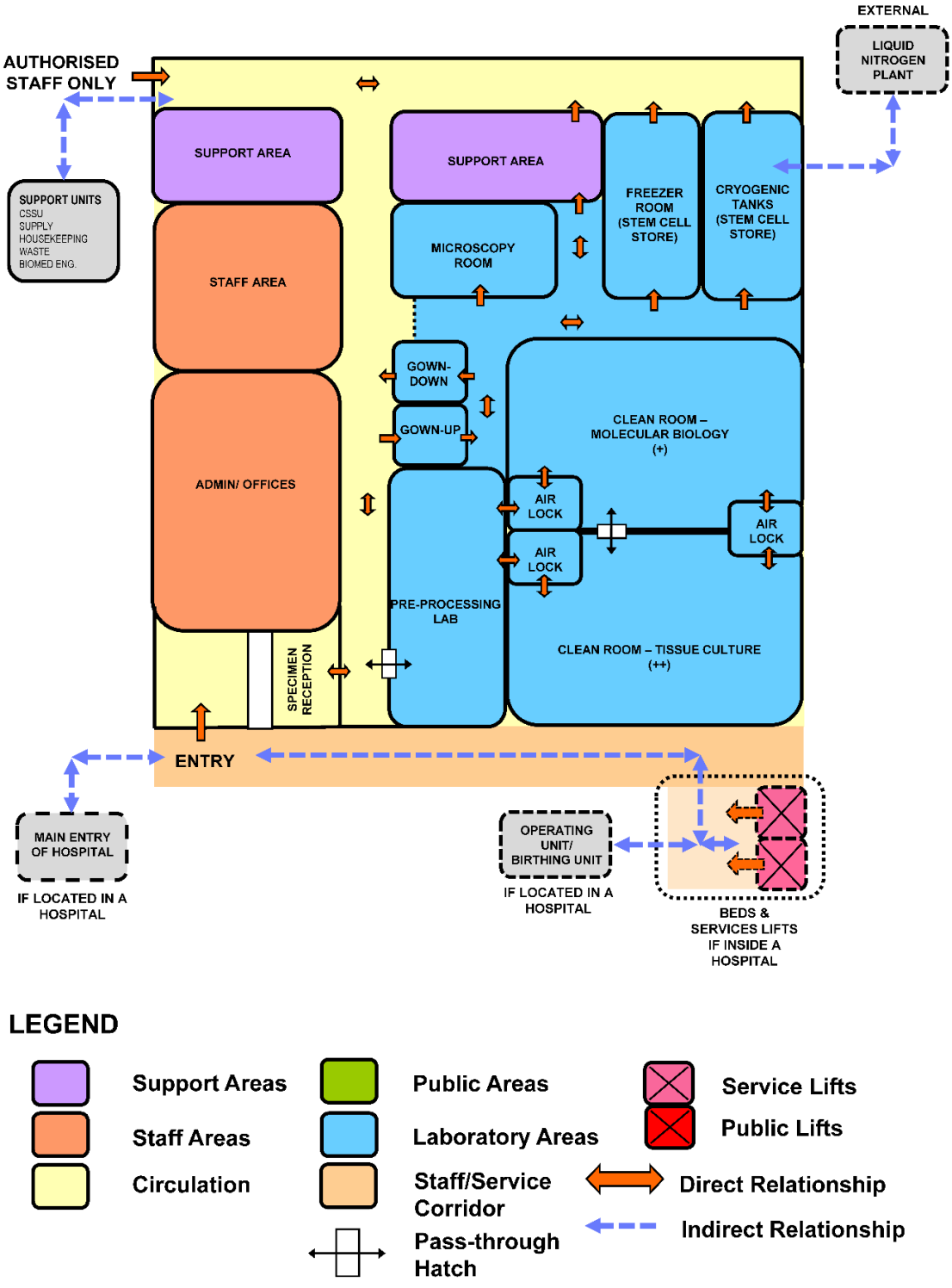
Internally, the Stem Cell unit will be arranged in zones with a clear flow of processing from Reception to the Laboratory areas required for specific specimen processing and storage. Support areas will be ideally located with ready access from the laboratory areas. Staff areas may be located in a discreet staff accessible zone, away from processing areas.

The preferred internal relationships are demonstrated in the diagram below and include:

- Specimen Reception at the Entry in an enclosed area.
- Controlled access at entry points to Staff and Laboratory areas.
- Support areas located centrally to the Laboratory areas and also at the perimeter for supplies where possible.
- Staff areas including Offices and Meeting Room located in a staff zone accessible without traversing laboratory areas.
- Staff Amenities located closer to the entry to the Unit, ideally separate from the Specimen Reception Entry.

Functional Relationships Diagram

The functional relationships of a typical Stem Cell Unit are best demonstrated in the diagram below. An additional zone for Research and Development is optional and should be provided in accordance with the Service Plan.



4 Design Considerations

Environmental Considerations

Acoustics

Acoustic treatment to be provided for noise reduction from processing equipment such as specimen analysers, washer/ decontaminators, sterilisers, refrigerators and freezers. This may include special floor coverings, wall insulation, acoustic ceilings, window coverings.

Acoustic privacy should be provided to Offices, Staff Rooms and Meeting Rooms.

Refer to **Part G – Acoustics** of these Guidelines for more information.

Natural Light/ Lighting

Natural lighting encourages positive morale and working environment for the staff. It also aids visual inspection and is important in certain type of laboratories and staff areas within the Unit.

For areas not located on the perimeter of the floor and access to natural lighting is difficult, internal glazed walls should be considered.

Internal and task lighting must be sufficient for safe operation of equipment, use of computer screens and provide good visibility for digital displays on equipment.

Space Standards and Components

Clearance

Configuration of laboratory benches, furniture, fixtures and equipment must not impede emergency access to an exit. A pathway, leading to the face of an exit must have minimum 900mm clearance.

The space between laboratory benches and adjacent workstations should be 1.5m or greater to provide ease of access.

Also Refer **Part C – Access, Mobility, OH&S** in these Guidelines.

Accessibility

Design should provide ease of access for wheelchair bound patients in all patient areas including Assessment Rooms, Delivery Rooms and Lounges. Waiting areas should include spaces for wheelchairs (with power outlets for charging electric mobility equipment) and suitable seating for patients or their visitors with disabilities or mobility aids. The Unit may require provision for bariatric patients.

Doors

Door openings must be sized adequately to accommodate laboratory equipment such as biosafety cabinets, refrigerators, freezers, cryogenic tanks and incubators.

Also Refer Part C – Access, Mobility, OH&S in these Guidelines.

Ergonomics/ OH&S

Workstations are recommended to be height adjustable. Laboratory benches, sinks and processing workstations should be provided at suitable working heights and no less than 750mm deep.

The following occupational health and safety issues should be addressed during planning and design for staff safety and welfare:

- Chemical agents used in analysers and cleaning/ decontamination processes and flammable liquids that involve specific chemical handling requirements (Refer to local regulations)
- Electrical and fire hazards related to equipment in use
- Biological hazards of contaminated material undergoing processing, which requires stringent infection control management.

Also Refer **Part C – Access, Mobility, OH&S** in these Guidelines.

Size of the Unit

The size of the Stem Cell Unit will be determined by the Service Plan and Operational Policies.

Schedule of Accommodation (SOA) included and provided in this FPU is for typical hospital-based units for Role Delineation Level (RDL) 4 to 6 facilities.

Sufficient space around laboratory equipment for maintenance must be considered during the design phase. Structural design should consider for heavy equipment if provided.

Safety and Security

The Stem Cell Units should be secured with restricted access for the authorised personnel only. CCTV cameras and alarm systems should be installed at the storage and laboratory areas within the Unit. The use of glazing and internal windows should be maximised wherever possible in the laboratory areas.

Finishes

Finishes including building fabric, floor, wall and ceiling finishes, should be relaxing and non-institutional as far as possible. The following additional factors should be considered in the selection of finishes:

- acoustic properties
- durability
- ease of cleaning
- infection control
- fire safety
- movement of equipment

Provide smooth, monolithic, chemical resistant and impervious to moisture finishes to work surfaces. Standard laminated benchtops are not suitable. Benchtops should be seamless to prevent contamination from spillage. Splashback or coved upturns must be provided when the benchtop abuts a wall.

Floor and walls should be anti-static, heat resistant, anti-bacterial, anti-fungal and chemical resistant. All joints in flooring must be sealed and coved at the edges (against walls or fixed joinery) where possible. Water and chemical resistant are also important characteristics of selected flooring. Walls shall be painted with lead free paint.

Refer to **Part C - Access, Mobility and OH&S** of these Guidelines for more information on wall protection, floor finishes and ceiling finishes.

Fixtures, Fittings and Equipment

Patient and foetal monitoring such as cardiotocograph (CTG) monitors should be located to provide ready access to the patient and the monitor.

For specific information on fittings, fixtures and equipment typically included in the Unit refer to Part C - Access, Mobility and OH&S in these Guidelines, the Room Layout Sheets (RLS) and Room Data Sheets (RDS).

Building Service Requirements

Communications

The following items relating to IT/ Communication shall be addressed in the design of the Unit:

- Electronic patient records and patient information systems
- Electronic forms and requests for investigations, pharmacy, catering, supplies
- Picture archiving communications systems (PACS)
- Telephones including cordless and mobile phones/ DECT
- Computers, laptops and tablets
- Patient call, nurse assist call, emergency call systems

- Paging for staff and emergencies
- Duress systems, personal mobile duress systems may be considered
- Supply and records management systems including bar coding for supplies
- Wireless network requirements
- Videoconferencing requirements
- Communications rooms and server requirements.

Nurse Call

Patient call, staff assist and emergency call facilities shall be provided in all patient areas including Assessment rooms, Delivery rooms, Lounges, Toilets, Ensuites and Bathrooms for patients and staff to request urgent assistance.

Individual call buttons will sound an announcement system. The circulation area should include annunciator panels strategically placed, especially in staff stations, staff rooms, and meeting rooms. These panels should be "non-scrolling" in nature so that all calls may be seen at once. In order to ensure that patients are not overly bothered at night, these call systems' audible signal should be controlled. At all instances, a discreet approach must be taken when alerting staff members.

Heating Ventilation and Air Conditioning (HVAC)

The Stem Cell Unit shall have appropriate air conditioning that allows control of temperature and humidity for the proper handling of specimens and equipment functioning.

Special air-conditioning systems that provide positive pressure will be required in some laboratories. In addition, exhaust should be considered to minimise odours and prevent aerosol contamination of adjacent areas where applicable.

All HVAC units and systems are to comply with services identified in Standard Components and **Part E – Engineering Services**.

Medical Gases

Liquid Nitrogen will be required to the cryogenic tanks. It can be provided via an on-site central plant or portable cylinders. When a central plant is provided, a cavity-feed system may be considered.

At the tissue culture area, in which the CO_2 incubator(s) is/are installed, the following medical gases are required:

- CO_2
- O_2
- N_2O

These should ideally be provided as reticulated gases. However, when this is not possible, portable gas cylinders may be provided.

Compressed air will be required to the laboratory area.

Public Health

Warm water supplied to all handwash basins and emergency shower/ eyewash stations should be ideally at 38 degrees Celsius and must not exceeds 43 degrees Celsius. Hot water and cold water should be supplied to sinks inside the laboratory area.

Infection Control

Hand Basins

Handwashing facilities shall be required in laboratories and other rooms as specified by the Standard Components. Taps to Hand Basins in laboratories should be elbow-action taps, automatic taps (sensor) or foot-operated taps.

Hand-washing facilities shall not impact on minimum clear corridor widths.

Hand basins are required in the following area as a minimum:

- Ante Rooms
- Inside each laboratory sub-unit
- Clean-up rooms

Hand basins are to comply with Standard Components – "Bay - Hand-washing" and Part D - Infection Control.

Antiseptic Hand Rubs

The use of antiseptic hand rubs should be carefully considered and ensure the integrity of specimen is not sensitive to alcohol-based substances.

When provided, they should be located at the Reception, entry and exit to the unit and in staff circulation areas.

The placement of antiseptic hand rubs should be consistent and reliable throughout facilities. Antiseptic based hand rubs are to comply with **Part D - Infection Control**, in these guidelines.

Antiseptic Hand Rubs, although very useful and welcome, cannot fully replace Hand Wash Bays.

Emergency Shower and Eye-wash Station

Each laboratory area must have access to at least one emergency shower and eye-wash station.

Chemical Storage

Storage for chemicals and reagents should be physically separated from other storage in the Laboratory Unit with designated cabinets. Chemicals and reagents should not be stored in cabinets if they are fixed above a sink/s.

5 Components of the Unit

Standard Components

Standard Components are typical rooms in a health facility, each represented by a Room Data Sheet (RDS) and Room Layout Sheet (RLS). Sometimes, there are more than one configuration possible and therefore, more than one room layout sheet can be found in the Standard Components for a room with same function. They may differ in room size and/or the requirement of FF&FE items.

The Room Data Sheets are presented in a written format, describing the minimum briefing requirements of each room type divided into the following categories:

- Room Primary Information; includes briefed areas, occupancy, room description, relationships and special room requirements
- Building Fabric and Finishes; describes fabric and finishes for the room's ceiling, floor, walls, doors and glazing requirements
- Furniture and Fittings; lists all the fittings and furniture typically located in the room; Furniture and Fittings are identified with a group number indicating who is responsible for providing the item according to a widely accepted description as follows:

Group	Description
1	Provided and installed by the Builder/ Contractor
2	Provided by the Client and installed by the Builder/Contractor
3	Provided and installed by the Client

- Fixtures and Equipment; includes all the serviced equipment commonly located in the room along with the services required such as power, data, water supply and drainage; Fixtures and Equipment are also identified with a group number as above indicating who is responsible for provision
- Building Services - indicates the requirement for communications, power, HVAC (Heating, Ventilation and Air Conditioning), medical gases, nurse/ emergency call and lighting along with

quantities and types where appropriate. Provision of all services items listed is mandatory.

The Room Layout Sheets (RLS's) are indicative plan layouts and elevations illustrating an example of a good design. The RLS indicated are deemed to satisfy these Guidelines. Alternative layouts and innovative planning shall be deemed to comply with these Guidelines provided by the following criteria are met:

- Compliance with the text of these Guidelines
- Minimum floor areas as shown in the schedule of accommodation
- Clearances and accessibility around various objects shown or implied
- Inclusion of all mandatory items identified in the RDS.

Standard Components have considered the required design parameters described in these Guidelines. Each FPU should be designed with compliance to Standard Components - Room Data Sheets and Room Layout Sheets, nominated in the Schedules of Accommodation in Appendices of this FPU.

Non-Standard Components

Non-standard rooms are identified in the schedules of accommodation as NS and are identified below.

Clean Room – Tissue Culture

The room should accommodate 1 to 2 laboratory technicians. It should have relative positive pressure to the Molecular Biology Clean Room.

Requirements include:

- Laboratory-grade work bench
- Biosafety Cabinet
- Cell Extractor
- CO2 incubator
- Microscope
- Low-speed centrifuge
- Water Bath
- Trolley (adjacent to Biosafety Cabinet for tissue culture supplies)
- Suction

Clean Room – Molecular Biology

The room is used to carry out a predetermined list of characterisation assays that enable one to systematically evaluate the calibre of the laboratory-cultured cells as well as used for quality control.

Requirements include:

- Laboratory-grade work bench
- Real Time PCR
- Flow Cytometer
- Fluorescence Microscope
- Confocal Microscope

6 Schedule of Accommodation

The Schedule of Accommodation (SOA) provided in the Appendices of this FPU represents generic requirements for this Unit. It identifies the rooms required along with the room quantities and the recommended room areas. The sum of the room areas is shown as the Sub Total as the Net Area. The total area comprises of the sub-total areas of these rooms plus an additional percentage of the sub-total applied as the circulation (corridors within the Unit). Circulation is represented as a percentage is the minimum recommended target area. Any external areas and optional rooms/ spaces are not included in the total areas in the SOA.

Within the SOA, room sizes indicated for typical units and are organised into functional zones. Not all rooms identified are mandatory, therefore, some rooms are found as optional in the corresponding Remarks. These Guidelines do not dictate the size of the facilities and the SOA provided represents a limited sample based on assumed unit sizes. The actual size of the facilities is determined by the Service Planning or Feasibility Studies. Quantities of rooms need to be proportionally adjusted to suit the desired unit size and service needs.

Any proposed deviations from the mandatory requirements, justified by innovative and alternative operational models may be proposed within the departure forms included in Part A of these guidelines for consideration by the health authority for approval.

Stem Cell Unit

ROOM/ SPACE	Standard Component Room Codes	RDL 4 to 6 Qty x m2			Remarks
Unit Size					
Entry/ Reception Area					
Receiving Area	NS	1	x	6	Specimen delivery entry to the Unit
Reception/ Registration	spre-i similar	1	x	12	Receiving, data entry for tracking and record etc.
Bay - Refrigerators	NS	1	x	1	Optional; temporary storage of specimen
Laboratory Areas					
Gown-Up	anrm-i similar	1	x	6	
Gown-Down	anrm-i similar	1	x	6	
Pre-Processing Laboratory	NS	1	x	15	Includes a pass-through hatch for specimen; provides hand wash basin
Air Lock	airl-6-i	2	x	6	1 per each Clean Room;
Clean Room – Tissue Culture	NS	1	x	30	Positive Pressured (++); size to suit equipment
Clean Room – Molecular Biology	NS	1	x	40	Positive Pressured (+); size to suit equipment
Microscopy Room	NS	1	x	12	
Emergency Shower/ Eye Wash	bese-1-i	1	x	1	Centrally located
Store - Low Temperature Freezer Room	NS	1	x	20	Size to suit number of cryo tanks; temperature monitored and alarmed
Store - Refrigerators		1	x	10	May be combined with Freezer Room
Store - Liquid Nitrogen (Cryogenic) Tanks	NS	1	x	20	Size to suit number of cryo tanks; temperature monitored and alarmed
Media Preparation/ Dispensing Room	NS	1	x	12	Ready-made media for tissue culture processing; if on-site production is preferred, other associated rooms will be required.
Liquid Nitrogen Supply Plant	NS	1	x	*	Externally located with good ventilation. Enclosed with cage with restricted access. Should be located conveniently for re-filling by trucks.
Support Areas					
Bay - Handwashing, Type B	bhws-b-i	1	x	1	In addition to basins in patient rooms; 1 at entry, 1 near staff station; Refer to Part D
Clean-up room	clup-7-s-i similar	1	x	7	
Sterilising Room	NS	1	x	7	Adjacent to Clean-up
Disposal Room	disp-8-i similar	1	x	6	
Store – Chemical & Reagents	stcm-i similar	1	x	6	
Store - General	stgn-8-i	1	x	8	Size as per service demand and operational policies

ROOM/ SPACE	Standard Component Room Codes	RDL 4 to 6 Qty x m2			Remarks
Unit Size					
Cleaner's Room	clrm-6-i	1	x	6	Includes storage for dry goods
Staff Areas					
Office - Single Person	off-s12-i	1	x	12	Unit Manager
Office - Single Person	off-s9-i	1	x	9	As required; for senior staff
Office - Write Up (Shared)	off-wis-i similar	1	x	20	Size to suit number of staff; may be more than one room is required
Meeting Room - Medium / Large	meet-l-15-i	1	x	15	May be shared with another adjacent unit
Store – Photocopy/ Stationery	stps-8-i	1	x	6	optional
Store - Files	stfs-10-i similar	1	x	8	optional
Staff Room	srm-15-i	1	x	15	Includes Beverage Bay
Change Room – Staff (M/F)	chst-12-i	2	x	10	Includes Toilet, Shower and Lockers; Alternatively, separate locker areas, toilets and showers can be provided
Sub Total				359.0	
Circulation %				20	
Total Areas				430.8	

Please note the following:

- Areas noted in Schedules of Accommodation take precedence over all other areas noted in the FPU
- Rooms indicated in the schedule reflect the typical arrangement according to the bed numbers
- Exact requirements for room quantities and sizes will reflect Key Planning Units (KPU) identified in the Clinical Service Plan and the Operational Policies of the Unit
- All the areas shown in the SOA follow the No-Gap system described elsewhere in these Guideline
- Optional area for Research and Development may be provided in accordance with the Service Plan.

7 Further Reading

In addition to Sections referenced in this FPU, i.e. Part C- Access, Mobility, OH&S, Part D - Infection Control, and Part E - Engineering Services, readers may find the following helpful:

- Guidelines for Design and Construction of Health Care Facilities; The Facility Guidelines Institute, 2014 Edition; refer to website www.fgiguidelines.org
- International Health Facility Guideline (iHFG), refer to website: www.healthdesign.com.au/ihfg