

Standard Operating Procedure

SOP159

Title: Use and Maintenance of the VIA Freeze™ - Research

Location: H25

1. PURPOSE

The intent of this SOP is to describe the use and maintenance of the VIA Freeze™ - Research device.

2. SCOPE

This SOP applies to authorised users of the VIA Freeze™ - Research (VFR) device located in the Containment Level 2 Laboratory Unit of the CBE. The VFR is primarily intended to be used as a controlled-rate freezer for the cryopreservation of cells (**CBE/SOP/031** “Cryopreservation and Storage of Mammalian Cell lines”).

3. RESPONSIBILITES

Authorised CBE Laboratory Users

- Shall ensure they understand the risks associated with the VFR and are competent to safely use the device.
- In the case of equipment failure/fault, authorised users shall notify the Responsible Person.

Responsible Person (RP)/Laboratory Manager (LM)

- Shall perform or supervise any cleaning and maintenance as specified in the user manual (see **VIA Freeze System User Manual – Rev A**).
- Shall perform admin functions as necessary for software updates as needed.
- Shall be responsible for training of users and granting authorised status.
- Shall maintain an authorised users list appended to the VFR.

4. EQUIPMENT AND MATERIALS

- VIA Freeze™ - Research
- VIA Freeze™ Heat Transfer Pad
- VIA Freeze™ Sample Holders (e.g. 48 x 2 ml cryovial holder or SUB plate holder)

5. PROCEDURE

The VFR is a programmable controlled-rate freezing device accessible via a touch-screen software interface. The user manual contains detailed information covering the proper start up, use and shut

Version 002

Effective Date: 03.09.2020

Review 03.09.2022

Written by: A.Picken	Reviewed by: P.Mitchell	Approved by: R.Temple
----------------------	-------------------------	-----------------------

Standard Operating Procedure

SOP159

Title: Use and Maintenance of the VIA Freeze™ - Research

Location: H25

down procedures (see **VIA Freeze System User Manual – Rev A**). For clarity, good practices when using and maintaining the device will be described in this SOP in context of local procedures for decontamination.

5.1 Routine cleaning and maintenance of the VFR

CAUTION: Section 7.1.1 of the User Manual describes acceptable cleaning agents for use with the VFR. Some cleaning solutions, like acetone are incompatible. Only use approved cleaning agents.

5.1.1 Cleaning protocol

- a) Before cleaning the VFR, ensure that a heating cycle has been performed and that the VFR has been switched off.
- b) Unplug the power lead and any other cables/wires from the back of the VFR.
- c) Spray white paper roll with 70% IMS.

Caution: DO NOT spray the VFR directly with 70% IMS, as the solution may enter the air vents and damage the device internally.

- d) Wipe down the outer surface, lid, sample holder, cooling chamber inner surface and the SBS mount to remove debris, dirt and other detritus which may accumulate over time.
- e) Inspect the air vents for dust and debris, and remove if required with white roll under-saturated with 70% IMS.
- f) Allow any residual 70% IMS to dry from the VFR.
- g) After cleaning is completed, and before next use, replace previously unplugged cables and wires, switch on the VFR and perform a full heating cycle.
- h) Once the heating cycle is completed, switch the VFR off.

5.1.2 Heat Transfer Pad Replacement

VIA Freeze™ instruments are supplied with spare heat transfer pads. It is recommended that the heat transfer pads are replaced if sufficiently dirty or damaged, as this will maintain optimal VFR performance over time.

- a) Before heat transfer pad replacement, ensure that a heating cycle has been completed then switch off the VFR.
- b) Peel the old heat transfer pad from the SBS mount.
- c) Ensure any remnants from the old pad are removed using 70% IMS saturated white roll.
- d) Wipe clean the SBS mount using 70% IMS saturated white roll and allow the SBS mount to dry fully.
- e) Remove a new heat transfer pad from its packaging.
- f) Peel the backing away from the pad halfway.
- g) Align the short edge of the pad with the recess in the SBS mount and press on firmly.
- h) Gradually roll the length of the pad onto the SBS mount, peeling the backing off as required.

Version 002

Effective Date: 03.09.2020

Review 03.09.2022

Written by: A.Picken	Reviewed by: P.Mitchell	Approved by: R.Temple
----------------------	-------------------------	-----------------------

Standard Operating Procedure

SOP159

Title: Use and Maintenance of the VIA Freeze™ - Research

Location: H25

- i) When the pad is fully placed, ensure all four corners and edges are pressed down firmly and are flush with the top of the SBS mount.
- j) Inspect the surface of the pad for any air bubbles and carefully push the bubbles out to the edges.
- k) The VFR is now ready for operation.

5.2 Transportation of the VFR

The VIA Freeze™ Research is supplied with a travel support, which ensures the VFR can be safely transported without damaging the Stirling cryocooler.

Should the VFR need to be moved within the CBE, or transported off-site (e.g. for repair), it is **vitaly important** that the travel support be replaced. This process is described in the user manual (Section 4.2) and is a **2 person process**.

The Responsible Person **must** be consulted before the VFR is moved to ensure this process is carried out safely.

5.3 Effective use of the VFR for cell cryopreservation

The VFR can be used to run defined cooling programmes for the cryopreservation of cells as outlined in **CBE/SOP/031**. Before using the VFR, ensure the following are established:

5.3.1 Location of the VFR

The VFR must be located at least 10 cm from any wall or obstruction, to ensure sufficient air-flow from the outer vents at the base of the VFR.

5.3.2 Instrument start up/shut-down

- a) The VFR has an on-board computer and does not require a peripheral laptop to operate.
- b) This equipment is password protected, and use is restricted to trained and authorised users only.
- c) Crucial points to consider before switching on the VRF are provided in section 4.1 of the User Manual.
- d) A step-by-step start up procedure is described in section 4.2 of the User Manual.
- e) To shut-down the VFR, simply select the shut-down option on the touch-screen main menu and switch off the instrument power at the back of the VFR (next to the power cable inlet).

5.3.3 Touch Screen Display (TSD)

- a) An overview of the TSD is provided in Section 4.3 and 4.4 of the User Manual.

5.3.4 System Overview

Version 002

Effective Date: 03.09.2020

Review 03.09.2022

Written by: A.Picken	Reviewed by: P.Mitchell	Approved by: R.Temple
----------------------	-------------------------	-----------------------

Standard Operating Procedure

SOP159

Title: Use and Maintenance of the VIA Freeze™ - Research

Location: H25

- a) Section 5 of the User Manual describes a high-level overview of the workflow, software and hardware of the VFR.

5.3.5 Detailed Use

- a) Section 6 of the User Manual describes specific information about software navigation elements; cooling protocol programming; record details; heating cycles and data exporting.
- b) Section 8 of the User Manual describes two approaches to sample loading and unloading of 2.0 ml cryovials from the VFR.
- c) Section 9 of the User Manual describes record logging; password and email settings; new protocol creation and editing (admin only); user management (admin only); servicing (admin only); systems administration; network security; software maintenance and event logging.

5.4 Equipment Malfunction

- (i) The Responsible Person and Laboratory Manager should be informed if any part of the equipment fails or malfunctions. With permission of the Responsible Person or Lab Manager the user should consult the Operator Instruction Manuals for fault finding and troubleshooting procedures.
- (ii) All problems and corrective actions should be recorded in the equipment maintenance record which can be found outside each respective laboratory.
- (iii) If the equipment fails to work or malfunctions and cannot be rectified according to troubleshooting procedures detailed in the Operator and Users Manuals the following should be observed:
- Inform the Responsible Person and the Lab Manager.
 - Attach a 'Do Not Use' notice.
 - Contact the manufacturer for advice. External maintenance and servicing of the VFR can only be performed after it has been suitably disinfected (see SOP003) and a 'Decontamination Certificate' has been issued (a proforma is available on the CBE LEARN page).

6. DOCUMENTATION

The following records are outputs of this SOP & can be found on the CBE website:

- QS-FORM- 009 : Decontamination of equipment certificate
- Equipment Maintenance Record log
- All Training should be recorded in individual training records

Version 002

Effective Date: 03.09.2020

Review 03.09.2022

Written by: A.Picken	Reviewed by: P.Mitchell	Approved by: R.Temple
----------------------	-------------------------	-----------------------

Standard Operating Procedure

SOP159

Title: Use and Maintenance of the VIA Freeze™ - Research

Location: H25

These records will be filed in the Equipment File and stored in the CBE Office or otherwise archived for future review or retrieval.

SOP Version History

Version Reviewed	Date Revised/ Reviewed	Revision Summary	New Version Number
001	31/08/20 N. Joglekar	Location of VIA Freeze changed from H27 to H25 Addition to section 5.2.3 (Instrument start up/shut-down)	002

Version 002

Effective Date: 03.09.2020

Review 03.09.2022

Written by: A.Picken	Reviewed by: P.Mitchell	Approved by: R.Temple
----------------------	-------------------------	-----------------------