Document Number:	**SASoM/EQUIP/071.v2**
Title:	**Use and maintenance of the Leica SM2010R Microtome**
Version:	**v2**
Author:	**Peter Mullen**

Effective from:	28/02/2019
Valid to:	27/02/2024

SOP History		
Number	Date	Reason for Change
v1	28/02/2014	Original
V2	28/02/2019	Update

1.0 Purpose –
The purpose of this SOP is to outline the principles of the routine use of the Leica SM2010R Microtome in Laboratory 248 at the St Andrews School of Medicine (SASoM).

2.0 Scope –
This SOP applies to routine use and maintenance of the Leica SM2010R Microtome within the SASoM.

3.0 Responsibilities –
It is the responsibility of all users of the Leica SM2010R Microtome within the SASoM to comply with this SOP.

4.0 Procedure –

******* All users are required to be trained and signed off by supervisory personnel.*******

The cryostat is equipment for sectioning of frozen or paraffin-embedded tissues, with automatic and adjustable movement of the specimen, according to desired thickness, and fixed knife. **It is not to be used for Human Samples.** If you require equipment for sectioning human tissue, please discuss with lab manager.

This microtome uses disposable blades only. Ensure there are no blades in the blade holder before use, and remove any blades after use.

Set the desired cutting thickness using the by using the adjustment knob on the right side of the microtome. (The range of thickness that can be cut is 0.5 – 60µm.) Section thickness can be adjusted from 0.5 – 5µm in 0.5µm increments, from 5 - 10µm in 1µm increments, from 10-20µm in 2µm increments, and from 20 – 60µm in 5µm increments.

Frozen Sectioning Instructions:

Attach dry ice tray into the quick clamping device, lock it in place with locking lever. Fill dry ice tray with dry ice (wearing heavy duty protective gloves provided) to initiate freezing of dry ice tray. While dry ice tray is cooling down, cut a small piece of filter paper approximately the size of the dry ice tray platform and place on the platform. Mount specimen onto the filter paper on the dry ice tray, ensuring it is in the desired orientation for sectioning. Gently apply water to the specimen and filter paper, this will aid in freezing the tissue. It may be necessary to add additional dry ice throughout the procedure.

Paraffin Sectioning Instructions:

Attach the paraffin cassette into the universal cassette clamp in the quick clamping device - Move the cassette clamp to the very bottom position by turning the coarse feed wheel. Lock the knife sledge in place using the locking knob. Cover the blade edge with the knife guard toward the right. Push the clamping lever upwards to open the clamp. Insert the cassette into the cassette clamp. To clamp the cassette, release the lever.

All Sectioning:

Inserting the blade into blade holder - Push the knife guard towards the right and push the lever upwards to release the clamp of the pressure plate. Carefully insert the blade into the blade holder. Using a brush stick, carefully push the blade into its final position. The notch makes it easier to push the blade all the way underneath the pressure plate. Push the clamping lever downwards to clamp the blade. Make sure that the blade is clamped parallel to the front edge of the pressure plate. Place the knife guard over the blade until ready for use.

For trimming, the specimen feed can be disengaged either by turning the coarse feed wheel or by operating the manual feed lever. Hold the knife sledge at the grip and place the sledge behind the specimen. Pull the knife guard of the blade holder/knife holder to the right. To feed the specimen towards the knife, turn the coarse feed wheel; or select the required section thickness with the section thickness adjusting knob and move the manual

feed lever. Each lever movement causes a specimen feed by the selected value. Move the knife sledge forth and back until the specimen surface is trimmed as required.

For sectioning, confirm that the desired section thickness is still set correctly on the adjustment knob, and pull the knife sledge over the specimen at constant speed. Carefully remove sections using a small brush (it helps to have liquid – PBS or similar buffer- on the brush when removing frozen sections).

If cutting more than one tissue block, you can use the same disposable blade, HOWEVER, place the safety guard over the blade when changing your specimens, and lock the knife sledge. Remove any remaining specimen from the specimen clamp and mount a new sample. Move the specimen clamp upwards using the coarse feed wheel until the new sample can start being cut.

When finished sectioning, unclamp blade and carefully remove using magnet at end of brush, or by removing it manually. Dispose in disposal part of blade box or into sharps bin. Remove dry ice tray (wearing heavy duty protective gloves provided) and wash with water. Wipe down microtome using 70% ethanol and a clean paper towel. Occasionally the sliding mechanism and other movable parts will require the application of oil. Use only Leica oil, or other approved oils for these surfaces. (Report to Mary Wilson or Melissa Andrews if cryostat has not cleaned by previous user.)

5.0 Personal protection –
Howie coat and lab gloves must be worn at all times.

6.0 Training –
All users have to be trained before using the Sliding Microtome by a designated person before using on their own.

7.0 Related documents –

7.1 Equipment manuals – (Leica_SM2010R_SlidingMicrotomeManual_1v2)

7.2 Risk assessments – (RA-GEN-032-Microtome)

8.0 Approval and sign off –

Author:

Name: Peter Mullen

Position: Research Fellow

Signature: Date:

Management Approval:

Name: Mike Fearon

Position: SOP Administrator

Signature: Date:

QA release by:

Name: Alex MacLellan

Position: QA Manager

Signature: Date:

STANDARD OPERATING PROCEDURE

Please sign below to indicate you have read this S.O.P and understand the procedures involved.

NAME	POSITION HELD	SIGNATURE	DATE