Document Number:	**SASoM/EQUIP/069.v2**
Title:	**Use and Maintenance of the Optima L-100XP Ultracentrifuge**
Version:	**v2**
Author:	**Simon Powis**

Effective from:	26/09/2018
Valid to:	25/09/2023

SOP History		
Number	Date	Reason for Change
v1	26/09/2013	Original
v2	26/09/2018	Update

1.0 Purpose –
This SOP describes the current procedure for the use of the Optima L-100XP Ultracentrifuge for use in Laboratory 248 at the St Andrews School of Medicine (SASoM).

2.0 Scope –
This SOP applies to the staff in the SASoM involved in using the Optima L-100XP Ultracentrifuge.

3.0 Responsibilities –
All staff involved in ultracentrifugation are responsible for ensuring that the methods are followed in accordance with this SOP.

All staff must have read and signed the relevant risk assessment documents before performing this procedure.

4.0 Procedure –

There are two rotors available for use with this instrument:

- SW32Ti (Serial Number: 10U-2562)
  takes 6 tubes with a maximum volume of 38.5ml; maximum rpm 32,000.

- SW55Ti (Serial Number: 10E-0316)
  takes 6 tubes with a maximum volume of 5ml; maximum rpm 55,000

1. Check the booking diary and if not booked, then enter booking.

2. Fill the ultracentrifuge tubes with the sample. The tubes must be filled within the range 30 - 35 ml for the SW32Ti rotor and 4 - 4.5ml for the SW55Ti rotor or will collapse if small volumes are used when high speed spins are used. The manufacturers recommend filling to 2 – 3 mm of top of the tube.

3. Weigh the tubes and buckets plus lids. Add or remove liquid so the tube weights balance within 0.1g. Must balance tubes in opposite pairs i.e 1 and 4, 2 and 5 and 3 and 6. Can use smaller number of tubes provided opposite samples balance i.e. don't need to fill all the 6 tubes.

4. Place the lids on the buckets and lock in position by turning clockwise. Make sure the bucket and lid number match. Load all the buckets even if not used but remember must balance. If using 2, 3 or 4 samples see manufacturer's instructions for positioning.

5. Place the buckets in the rotor. For the SW32Ti, the number on the lid faces outwards and must be placed in the same numbered slot. For the SW55Ti, make sure the bucket engages on the pins and hangs securely by both

6. Switch on the centrifuge. The switch is located on the right hand side of the casing.

7. Open the sliding lid when the computer has booted up. Carefully place the rotor on the central spigot and rotate slightly clockwise to lock. A click is heard. Close the sliding lid securely. If you rotate the rotor then may need to hit STOP button on the right of the panel, before you can start the cycle by pressing start on the touch screen.

8. Enter the settings for the centrifugation step on the touch screen. First check that the correct rotor is displayed. Touch the screen box with the rotor coding and select the rotor required. Touch the space where the speed is displayed and type in the required rpm or g value if you prefer. Select the acceleration and braking conditions. Set the time required by typing in the time field or by scrolling down the menus field and selecting. Press OK. Check the temperature is set appropriately.

9. Press START and cycle begins.

10. Enter details of the run in the Centrifuge Log Sheet including (i) the Rotor Type and (ii) the Rotor Serial Number.

11. Check all is running smoothly once up to speed.

12. Once cycle is completed and Stopped appears on the display then press the vacuum release button. Once the vacuum is released then you can open the chamber.

13. Lift out the rotor vertically and place on the stand. Carefully remove the buckets so as not to disturb any pellet.

14. Wipe out the chamber if any liquid present and close the lid before switching off the centrifuge. Often get condensation on the rotor as chilled so wipe with a paper towel.

15. Remove the centrifuge tubes from the buckets. If necessary wipe out the inside of the buckets if any liquid is present. If necessary, wipe with 70% alcohol.

ERROR MESSAGES:

If any of the error codes below appear at any time, action must be taken as detailed below:

- **D36:**
  Call Beckman Coulter Field Service. DO NOT attempt to start another run until the instrument is serviced.

- **D37 and/or D38:**
  Call Beckman Coulter Field Service and wait 4hrs before attempting to open if the display shows '0' RPM immediately after failure.

- **D60, D61 and/or D62:**
  Call Beckman Coulter Field Service and wait 4hrs before attempting to open if the display shows '0' RPM immediately after failure.

- **D67:**
  Call Beckman Coulter Field Service. DO NOT attempt to start another run until the instrument is serviced.

In all cases please inform either Mary Wilson or Simon Powis of any failure and enter details of the failure in the Centrifuge Log Sheet.

5.0 Personal protection -

A Howie laboratory coat and lab gloves must be worn at all times. Safety goggles or other suitable glasses should be worn.

6.0 Spillages -

Always clean up any spills immediately after use, only you know what you have spilt and are aware of its hazard.

Spillages should be mopped up with paper towel, disinfected with 70% ethanol and finally washed with distilled water. Do not use agents such as Virkon or Decon.

7.0 Training -
All staff should be trained in the use of the ultracentrifuge before using on their own.

8.0 Related documents –

8.1 Risk assessments – RA/GEN/002 (Centrifuges)

8.2 Code of Practice for use of centrifuges - University booklet on "Guidance on Chemical and Biological Safety – part 2 Biological and Genetic Modification Safety."

School Handbook – Health and Safety section (online)

9.0 Approval and sign off –

Author:

Name: Simon Powis

Position: Reader in Immunology

Signature: Date:

Management Approval:

Name: Mary Wilson

Position: Laboratory Manager

Signature: Date:

QA release by:

Name: Alex MacLellan

Position: QA Manager

Signature: Date