UNITY HEALTH TORONTO

Caring hearts. Leading minds.

Title:	**Title**		
Document Type:	Policy / Procedure	Document #:	
Program:	Research	Effective Date:	Feb 1 2021
Executive Sponsor:	Stephen Barker	Last Reviewed:	
Owner/Lead:	Monica Lodyga	Last Revised:	
Approval Body:	Research Biosafety Committee	Review Cycle:	3 year
Applicable Sites:	☐ **Unity Health** ☐ **Providence** ☐ **St. Joseph's** ☒ **St. Michael's**		

1.0 PURPOSE

This procedure document demonstrates how to use the Beckman Ultimax Ultracentrifuge, specifically with the **TLA-120.2** rotor

2.0 POLICY

To facilitate the correct usage of the Beckman Ultimax Ultracentrifuge.

3.0 PROCEDURE

For first time users please contact: ResearchFacilities@smh.ca

- Protect the bottom of the rotor, it is marked with spots that work with the tachometer sensor, damaging or obstructing them will cause issues. Always transport the rotor on the appropriate rotor stand.
- For runs at other than room temperature, refrigerate the rotor beforehand for fast equilibration.
- Always use appropriate tubes.
- Weigh your tubes to ensure proper equilibrium in the rotor (**opposing samples should be weighed and matched in weight to within 0.05 g** (preferably 0.01g)

Table 1 Available Tubes for the TLA-120.2 Rotor[a]

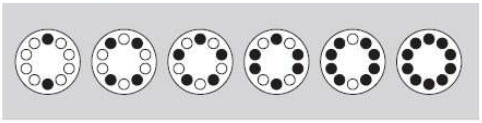
Tube			Required Accessory		Max. Speed/ RCF/k Factor
Dimensions and Volume	Description	Part Number	Description	Part Number	
11 × 34 mm 1.0 mL	thickwall polycarbonate	343778 (pkg/100)	none	—	120,000 RPM 627,000 × *g* 8
11 × 34 mm 1.0 mL	thickwall polypropylene	347287 (pkg/100)	none	—	80,000 RPM 279,000 × *g* 18
11 × 25 mm 1.5 mL	Quick-Seal polypropylene	344624 (pkg/50)	Noryl[b] spacer	344636 (pkg/6)	120,000 RPM 627,000 × *g* 14
11 × 32 mm 2.0 mL	Quick-Seal polypropylene	344625 (pkg/50)	Noryl spacer	344674 (pkg/6)	120,000 RPM 627,000 × *g* 16

a. Use only the items listed here and observe maximum fill volumes and speeds shown.
b. Noryl is a registered trademark of GE Plastics.

1) Turn on the centrifuge
- If **SPD (Speed-related malfunction)** is flashing in red try pressing CE to clear it
- If it does not wait 40-60 min → press CE (it clears the error)

2) Load the tubes symmetrically into the rotor (before placing the rotor in the centrifuge).
- If fewer than ten tubes are being run, they must be arranged symmetrically in the rotor.
- Opposing tubes must be filled to the same level with liquid of the same density and **matched in weight to within 0.05 g.**

Figure 2 Arranging Tubes in the Rotor



NOTE Two, four, five, six, eight, or ten tubes can be centrifuged per run if they are arranged in the rotor as shown.

3) **For TLA-120.2 rotor:** Gently place the rotor on the drive hub, push the plunger down until you feel it click.
- When your remove your finger, the plunger will remain flush with the rotor body if it is properly engaged.

1. Plunger Engaged

4) As per regular operation:
- Press Speed, use key pad to enter required speed, press enter

- Repeat for Time and Temperature

5) <u>Important set the appropriate acc/dec speed for the TLA-120.2 rotor</u>

- **ACCEL = 1** Accel time from 0 to 5000 rpm (minutes) = 0.5 min
- **DECEL=1** Decel time from 5000 to 0 rpm (minutes) = 1 min

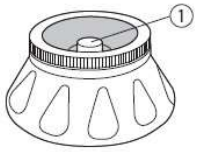
6) Let the centrifuge cool down to at least 8ºC before starting a 4ºC run.

7) Press **Enter/Display** before starting the run, then press **START**

- 'VAC' light will appear on the panel to indicate that the chamber pressure is above 500 microns. Once the pressure is below 500 microns, the message goes out and the rotor starts to spin.

8) When the rotor stops, (a tone sounds), press **DOOR** to unlock the chamber door, slide the door open.

9) To remove the rotor depress the plunger on the rotor lid, gently remove the rotor from the drive hub, place on rotor stand, then remove your samples.



1. Plunger Released

10) Use an absorbent towel to wipe off condensation from the chamber.

11) Leave the door slightly open for the chamber to dry completely.

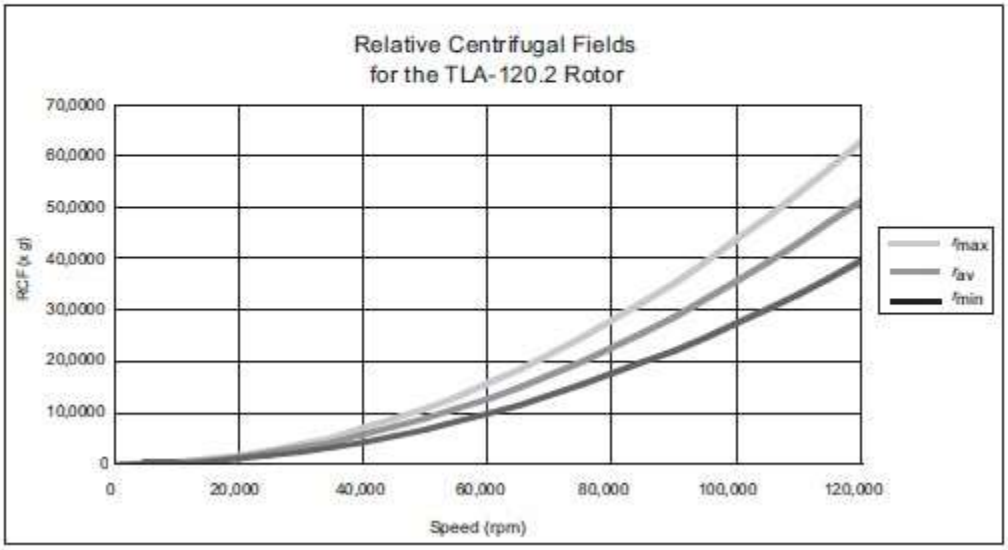
12) Turn off the centrifuge.

13) Report any persistent errors to **: <u>ResearchFacilities@smh.ca</u>**

Table 2 Relative Centrifugal Fields for the TLA-120.2 Rotor[a]

Rotor Speed (RPM)	Relative Centrifugal Field (× *g*)			*k* Factor*
	At r_{max} (38.9 mm)	At r_{av} (31.8 mm)	At r_{min} (24.5 mm)	
120,000	627,000	513,000	395,000	8
115,000	576,000	471,000	363,000	9
110,000	527,000	431,000	332,000	10
105,000	480,000	393,000	303,000	11
100,000	436,000	356,000	274,000	12
95,000	393,000	321,000	248,000	13
90,000	353,000	288,000	222,000	14
85,000	315,000	257,000	198,000	16
80,000	279,000	228,000	176,000	18
75,000	245,000	200,000	154,000	21
70,000	213,000	175,000	134,000	24
65,000	184,000	150,000	116,000	28
60,000	157,000	128,000	98,800	33
55,000	132,000	108,000	83,000	39
50,000	109,000	89,000	68,600	47

a. Entries in this table are calculated from the formula RCF = 1.12*r* (RPM/1000)2 and then rounded to three significant digits.



Version	Approval/Sub-approval body	Approval date
01		
02		
03		