

STANDARD OPERATING PROCEDURE

Procedure	Centrifugation (with interchangeable rotors)
School/Department:	School of Molecular Bioscience
SOP prepared by:	Matthew Wynn and Angela Nikolic
Version:	SMB058.1

Section 1 - Personal Protective Equipment (PPE)

1. Lab coat or lab gown
2. Safety glasses if handling eye hazards
3. Proper enclosed footwear
4. Hair tied back if long

Section 2 – Potential Hazards

1. Rotor imbalance can cause catastrophic failure of centrifuge (explosion), injuring user. Always balance the centrifuge tubes (by weight, not just by eye) to 0.1 g, and put the balanced tubes in opposing positions in the rotor.
2. Rotor can fail due to excessive speed, causing catastrophic failure of centrifuge, injuring user – know the speed limits of the rotor and don't exceed these. Maximum speed varies from one rotor to another; large rotors cannot be spun as fast as small ones.
3. **Ensure that the rotor is firmly attached to the spindle and that the rotor lid is VERY TIGHT** before starting the machine. This is done by screwing both rotor lid screws down tightly.
4. Rotor can fail due to extensive wear and tear, causing catastrophic failure of centrifuge, injuring user. Inspect rotors regularly by certified technicians, replace if damaged. Newer rotors generally have expiry or use-by dates so please take note of these dates contact supplier if date has been reached.
5. Centrifuge tubes can break in rotor due to excessive wear and tear or inappropriate use, causing imbalance of rotor, catastrophic failure of centrifuge, injuring user. Ensure you use the correct tubes for the sample type, and do not use cracked or broken tubes. Phenol and chloroform will rapidly destroy polycarbonate tubes and must be used in polypropylene tubes. You should also only use tubes suited to the rotor. Please check with custodian of centrifuge for which tubes are to be used. Autoclaving of tubes also shortens their lifespan.
6. Wait until the centrifuge gets up to full speed before walking away. If anything is going to go wrong (e.g. an imbalance), it will usually occur in this initial period. You need to be there to take action if this occurs.

Section 3 – Procedure

1. Know the location of spill kits, eyewashes, and safety showers before starting work.
2. Prepare suspensions to be centrifuged in appropriate tubes. The maximum volume level in each tube should not exceed 75% of the tube capacity.
3. Make sure that each pair of tubes is balanced by weighing them. Ensure that lids are correctly fitted. Use a blank tube filled with water if necessary.
4. Place tubes into the correct rotor. If your rotor does not appear to attach correctly, do not force it! Seek assistance from the equipment custodian.
5. Switch the centrifuge ON. Open the chamber door. Make sure you push the door all the way back. Injury can occur if the door falls closed on parts of your body.
6. Install the rotor by placing the rotor base on to the drive spindle. Check that it is securely fitted and centrally located onto the spindle.
7. Place the rotor cover onto the rotor base and lock the cover into place. Using the Eppendorf tool, tighten the rotor onto the spindle. If there are two rotor screws on the centrifuge model, screw both down.
8. Check that the rotor is firmly attached by attempting to lift it off the spindle. You should not be able to do this. If you can, open up the rotor, and restart from step 5 above.
9. Close the chamber door, and use the display to program in all parameters, including SPEED, TIME and TEMPERATURE.

<p>10. Close the lid gently when ready to begin centrifuging, and hit the Start button to begin the run. Note that the machine and rotor can also be pre-cooled by doing a short run for 10 minutes at 4 degrees.</p> <p>11. Once the run has ended, the machine will beep and the door will open. Remove your samples. If you need to do another run with the same rotor, repeat from step 8 above.</p> <p>12. Switch off the machine but leave the lid open to avoid excess condensation. Clean out the rotor with 80% ethanol if there have been any leaks. Do not use bleach – this will corrode the rotor. Leave the rotor upside down back in the correct storage location to drain out any residual ethanol.</p>
<p>Section 4 – Disposal / Spills / Incidents</p> <p>1. Depending on the nature of the spill, clean up as described in SOPs for Biohazard Spills, Flammables, Corrosives, or Toxic Substances.</p> <p>2. If a breakage and/or spillage occurs, clean rotors and centrifuge chamber immediately with 80% ethanol. The rubber sealing will deteriorate if spills are not attended to promptly.</p> <p>3. Depending on the nature of the materials used, dispose of wastes as described in SOPs for Biohazard Spills, or Chemical Wastes.</p> <p>4. Any large spills of hazardous materials (>1L) or incidents resulting in injury must be reported to your supervisor immediately and via the online incident report form within 24 h. Near misses (dangerous situations not leading to an incident) should also be reported.</p>
<p>Section 5 – Repairs / Certification / Validation</p> <p>1. Ensure centrifuges and especially rotors are undamaged and in good repair. Consult the equipment custodian if in doubt. If floor standing centrifuge, organize PM yearly with certified company technician.</p>
<p>Section 6 – Relevant safety data sheets (to be available and accessible)</p> <p>1. Please refer to the relevant safety data sheets for the materials being centrifuged.</p>
<p>Section 7 - References</p> <p>1. Risk assessment for centrifugation</p> <p>2. SOPs for Biohazard Spills (SMB004), or Chemical Waste (SMB008).</p>

SOP Consultation, Training and Approval

Print names and enter signatures and dates to certify that the persons named in this section have been consulted/trained in relation to the development and implementation of this Standard Operating Procedure. WHS Representative (WHS Committee) certifies that consultation has taken place.

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