

## Safety Documentation

Please select the forms you require by selecting the check boxes below.  
You can select more than one.

**Risk Assessment**                       **Method Statement**                       **Chemicals COSHH**

Once you have made your selections, scroll down and complete the forms.

**Buttons:** [+ ] will add a row to a list    [- X ] will delete a row from a list

You may save this file to a local drive at any time.  
When you have finished, save the file to a local drive and email it to your supervisor for authorisation.

**Supervisors** - There is a sign-off section at the end of the document set that must be completed.

**Staff may "self authorise", (as a supervisor), but the forms must still be submitted to the DSO for approval.**

### **IMPORTANT:**

YOU **MUST NOT** START ANY PRACTICAL WORK UNTIL THESE FORMS HAVE BEEN RETURNED TO YOU  
WITH **BOTH** YOUR SUPERVISOR'S AND DSO'S APPROVAL SIGNATURES ATTACHED.

### Please complete these fields

School or Service	Wolfson School of Mechanical, Electrical and Manufacturing Engineering
Department	Centre for Biological Engineering
Originator name	Sotiria Toumpaniari
email address	s.toumpaniari@lboro.ac.uk
Location	H27
Project / Activity / Task	Paraffin embedding and sectioning
Supervisor Name	Prof Sotiris Korossis

### Risk Assessment

Reference

Location

Originator

Project / Activity / Task

Is this process risk assessment for a :  Laboratory / Workshop  General use

Category 1: Machinery & work equipment:				
Design and Construction	Mechanical hazards	Electrical hazards	Radiation hazards	
N/A	Cutting/Shearing	Electrical test lables current	Heat(Inc. IR)	+
Category 2: Workplace				
Localised hot surfaces				+
Slips/Trips/Falls on the level				+
Category 3: Hazardous and/or Harmful substances				
Flammable substances				+
Irritant substances				+
exposure to Covid-19				+
Category 4: Work activity				
Lone working out of hours				+
Category 5: Work organisation				
N/A				+

Explain the risks associated with these hazards				
People / Groups at risk	<input type="text" value="Operator only"/>			+
Enter risk details here:-	Impact	Probability	Risk Score	
<input type="text" value="Cutting fingers using the microtome/ removing knife"/>	<input type="text" value="Harmful"/>	<input type="text" value="Likely"/>	High	
What are the control measures?	Lowers Impact	Lowers Probability	+	
<input type="text" value="The microtome has a knife guard to cover the knife edge"/>	<input type="text" value="Significantly"/>	<input type="text" value="Significantly"/>	+	
<input type="text" value="Always remove knife, when not in use."/>	<input type="text" value="Significantly"/>	<input type="text" value="Significantly"/>	+	
<input type="text" value="Remove microtome knife using a pair of tweezers and wear cut-resistant gloves level 5"/>	<input type="text" value="Significantly"/>	<input type="text" value="Significantly"/>	+	
<input type="text" value="Always clamp the specimen block before clamping the knife."/>	<input type="text" value="Significantly"/>	<input type="text" value="Significantly"/>	+	

## Process Risk Assessment Form (Continued)

Lock the handwheel and cover the knife edge with the knife guard prior to any manipulation of knife or specimen, as well as prior to changing specimens and during all work breaks.	None	None	x	
	None	None	x	
			Residual Risk	
			Low	
People / Groups at risk	Operator only			x
Enter risk details here:-	Impact	Probability	Risk Score	
Electric shock and burns from faulty portable devices	Very Harmful	Likely	Unacceptable	
What are the control measures?	Lowers Impact	Lowers Probability	+	
PAT test for portable devices- including paraffin wax dispenser, mounting bath and hotplate	Significantly	Significantly	x	
			Residual Risk	
			Low	
People / Groups at risk	Operator only			x
Enter risk details here:-	Impact	Probability	Risk Score	
Scolding from hot surfaces	Harmful	Likely	High	
What are the control measures?	Lowers Impact	Lowers Probability	+	
Avoid touching the hot surfaces and handle samples using tweezers	Significantly	Significantly	x	
			Residual Risk	
			Low	
People / Groups at risk	Operator only			x
Enter risk details here:-	Impact	Probability	Risk Score	
Scolding from molten wax	Harmful	Likely	High	
What are the control measures?	Lowers Impact	Lowers Probability	+	
Paraffin dispenser containing molten wax has a lid	Significantly	Significantly	x	
When wax is dispensed, keep hands away from the wax	Significantly	Significantly	x	
			Residual Risk	
			Low	
People / Groups at risk	Everyone in the room			x
Enter risk details here:-	Impact	Probability	Risk Score	
Irritant substances	Very Harmful	Likely	Unacceptable	
What are the control measures?	Lowers Impact	Lowers Probability	+	
Work with these substances only in fume hood	Significantly	Significantly	x	
			Residual Risk	
			Low	
People / Groups at risk	Everyone in the room			x

## Process Risk Assessment Form (Continued)

Enter risk details here:- Fire	Impact Very Harmful	Probability Likely	Risk Score Unacceptable
What are the control measures?	Lowers Impact	Lowers Probability	+
Keep flammable substances away from sources of ignition	Significantly	Significantly	x
Bi-annual PAT testing of devices and visual inspection of cables and connectors prior to use	Moderately	Significantly	x
Carbon dioxide fire extinguisher	Moderately	Significantly	x
			Residual Risk Low
People / Groups at risk	Operator and people in proximity		x
Enter risk details here:- Slipping from dry wax or water on the floor	Impact Harmful	Probability Likely	Risk Score High
What are the control measures?	Lowers Impact	Lowers Probability	+
Remove paraffin wax as soon as it dry	Significantly	Significantly	x
Absorb water from floor with paper towel for small spillage or mop for larger spillage.	Significantly	Significantly	x
			Residual Risk Low
People / Groups at risk	Operator only		x
Enter risk details here:- Electrocution	Impact Very Harmful	Probability Unlikely	Risk Score High
What are the control measures?	Lowers Impact	Lowers Probability	+
Bi-annual PAT testing and visual inspection of cables and connectors prior to use	Significantly	Significantly	x
			Residual Risk Low
People / Groups at risk	Operator and people in proximity		x
Enter risk details here:- Lone working	Impact Harmful	Probability Highly Unlikely	Risk Score Low
What are the control measures?	Lowers Impact	Lowers Probability	+
Permission to work out of hours must be obtained prior to work commencing, and must be adhering to CBE protocols. Sign in using the lone working Power App. Inform security that you are lone working in the building - time of arrival and leaving. Inform a colleague or supervisor that you intend to work independently and state duration. If duration is longer than 2 hours you should be accompanied. Ensure you have a mobile phone at all times.	Slightly	Moderately	x
			Residual Risk Low

## Process Risk Assessment Form (Continued)

People / Groups at risk	Everyone in the room		<b>X</b>
Enter risk details here:-	Impact	Probability	Risk Score
Exposure to Covid-19	Very Harmful	Highly Unlikely	Medium
What are the control measures?	Lowers Impact	Lowers Probability	<b>+</b>
Follow all national, local and University Covid-19 guidelines, and respect local Lab rules. Frequent washing / sanitizing of hands / gloves to be carried out. Touch points and surfaces to be cleaned / wiped down after use. Social distancing should be maintained at 2 metre, but 1M+ is allowed where all concerned are wearing face coverings Check local Covid tier rating	None	Moderately	<b>X</b>
			Residual Risk
			Low
<b>+ Add another Risk</b>			

### Who may be at risk as a result of this activity?

Personnel Group	Maximum (Task setup/ Re-configuration)	High (Performing the task)	Medium (Observing the task)	Low (Present, but not involved)	Lone Working (Out of hours)	No Exposure Permitted	Total
Academic Staff	0	1	0	0	0	0	1
Technical Staff	0	1	0	0	0	0	1
Research Staff (PDRA)	1	0	0	0	0	0	1
Research Students (PhD)	0	2	0	0	0	0	2
Students (Undergraduate / MSc)	0	0	2	0	0	0	2
Visitors	0	0	0	0	0	0	0
Others - Over-type as needed	0	0	0	0	0	0	0
<b>Total</b>	<b>1</b>	<b>4</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7</b>

With these controls in place, the risk is:

**The activity is LOW RISK - and is effectively controlled**

# Safety Method Statement

Reference SAF/MEME/6740

Location H27

Originator Sotiria Toumpaniari

Project / Activity / Task Paraffin embedding and sectioning

## What equipment will be used in this activity?

	+
Paraffin Wax dispenser MH8524	X
IP ActivFlo Biopsy III Cassettes	X
Metal mould	X
Container with ice	X
Microtome RMS2125 RTS	X
Thermo scientific digital mounting bath 230V	X
Thermo scientific slimline hotplate 230V	X
Glass microscope slides	X
Tweezers	X
Cut resistant gloves level 5	X

## What training must be completed to do this activity?

	+
Sharps use	X

## What chemicals are being used? (These must be included in the COSHH Form)

	+
Paraffin Surgipath Paraplast Plus	X

## Spill and accident procedures.

	+
In case of paraffin wax spillage, let wax cool down and then it can be easily removed.	X
In case of water spillage, use paper towel for small quantities or a mop for large water quantities.	X
In case of injury- cutting from blade, contact first aider.	X
When hot plate and/or wax dispenser are turned on, have a note visible for other lab user mentioning to avoid touching equipment.	X

## Procedure in the event of an emergency. (How to leave the process in a safe condition in such an event)

	+
Have ready labels to leave in front of hot plate and wax dispenser highlighting that equipment should not be touched. Switch off wax dispenser. Switch hot plate and mounting bath, if you do not have samples inside. Cover microtome. Leave note saying that histology is in process. All notes should have the name of the user and date.	X

## References.

	+
Manual for wax dispenser- <a href="http://www.electrothermal.com/adminimages/ET0003.pdf">http://www.electrothermal.com/adminimages/ET0003.pdf</a>	X
Manual for microtome RMS2125 RTS- <a href="https://drp8p5tqcb2p5.cloudfront.net/fileadmin/downloads_lbs/Leica%20RM2125%20RTS/User%20Manuals/Leica_RM2125RTS_IFU_2v7K_en.pdf">https://drp8p5tqcb2p5.cloudfront.net/fileadmin/downloads_lbs/Leica%20RM2125%20RTS/User%20Manuals/Leica_RM2125RTS_IFU_2v7K_en.pdf</a>	X
Paraffin - <a href="https://www.sigmaaldrich.com/catalog/product/sigma/p3683?lang=en&amp;region=GB&amp;gclid=EAlaIqobChMIsdDlo_3S7QIV0NnVCh0EfgnAEAAAYAiAAEgIn3PD_BwE">https://www.sigmaaldrich.com/catalog/product/sigma/p3683?lang=en&amp;region=GB&amp;gclid=EAlaIqobChMIsdDlo_3S7QIV0NnVCh0EfgnAEAAAYAiAAEgIn3PD_BwE</a>	X

## Safety Method Statement (Continued)

### Detailed sequential description of the process

Process step	Precautionary measures and comments	+
Pour paraffin pellets in paraffin wax dispenser.	Avoid spilling pellets	X
The paraffin wax dispenser temperature needs to be set to result in melting the paraffin and turn it into viscous liquid.	The temperature should be at 2 degrees C above the melting point of the paraffin.	X
Open one cassette at a time maintaining the specimen integrity and place it in a metal mould.	Work on chemical resistant tray.	X
Place a small amount of paraffin in your mould using the paraffin dispenser.	Work on chemical resistant tray.	X
Orient the tissue correctly in your mould using forceps.	Use warm forceps.	X
Allow the paraffin to cool only enough to anchor the tissue in place.		X
Add the labelled tissue cassette on the top of the mould as a backing. Press firmly.	Be careful not to damage the paraffin/ sample in the cassette.	X
Hot paraffin is added to the mould from the paraffin dispenser. There should be enough paraffin to cover the face of the plastic cassette.	Avoid overfilling.	X
Set the mould on a cold surface.	Make sure ice comes in contact with metal tray to maintain it cold. Immediate and rapid solidification is required to avoid large crystal formation in the wax.	X
When the paraffin is reasonably solidified remove the block from the mould.	Paraffin should solidify in 30min. When, the paraffin is fully solidified and hardened it can be easily removed from the mould. The wax blocks should not stick. If the wax cracks or the tissues are not aligned well, simply melt them again and start over.	X
Chill paraffin-embedded tissue blocks on ice or in the freezer before sectioning.		X
Fill the mounting bath with ultrapure water and heat to 40-45 degrees C.	Avoid spillages, whilst pouring water. Have some paper towel around the equipment to absorb possible spillage.	X
Insert the paraffin block and orientate so the blade will cut straight across the block.	Before clamping the cassette into the universal cassette clamp, remove excess wax on the outside of the cassette to ensure that the cassette clamps in securely. Wax deposits on the outside of the cassette can make the universal cassette clamp dirty. The dirt prevents the cassette from clamping in securely and can lead to sections being too thick or thin, chattering within the section and, in the worst-case scenario, damage to the specimen. Ensure that cassette is seated securely the universal cassette clamp.	X
Insert the knife in the holder, ensure it is secure and set the clearance angle.	Prior to inserting the knife, both knife holder and knife holder base must have been installed on the instrument. The clearance angle prevents contact between the knife facet and the face of the block. Follow the microtome manufacturer's instructions for guidance on setting the clearance angle. For Leica blades this is normally between 1 and 5 degrees.	X
Orientate the paraffin block so the blade will cut straight across the block.		X

## Safety Method Statement (Continued)

Process step	Precautionary measures and comments	+
Approach the block to the knife and cut a few thin sections to ensure the positioning is correct.	Adjust if necessary.	X
Trim the block to expose the tissue surface to a level where a representative section can be cut.	Trimming is normally done at a thickness of 10-30 $\mu\text{m}$ .	X
Cut sections at a thickness of about 4-5 $\mu\text{m}$ .	The first few sections will need to be discarded as they are likely to contain holes caused by trimming.	X
Using tweezers, pick up the ribbons of sections and float them on the surface of the water in the mounting bath so they flatten out.	Use the tweezers to separate the sections.	X
Use microscope slides to pick the sections out of the water bath and store upright in a slide rack.		X
Place the slide rack onto a hot plate for slides and allow sections to dry at 37 degrees C overnight or 65 degrees C for 20 min.		X
Empty the wax dispenser and collect wax in glass beaker.	Wipe residue using a paper towel.	X



## Supervisor and Departmental Safety Office (DSO) Sign-off.

### Supervisors

Please check the documents above and if you want to approve them:

- 1) Electronically sign this document
- 2) Save it to a local drive (You will be prompted to do this)
- 3) eMail the signed document to the DSO.

### DSO

Please review the documents above and if you want to approve them:

- 1) Enter the reference numbers as appropriate
- 2) Electronically sign this document
- 3) Save it to a local drive (You will be prompted to do this)
- 3) eMail the signed document to the originator

### IF YOU DO NOT WANT TO AUTHORISE THE FORMS,

Please do not sign the form, but click the "Not Approved" check-box and return it to the originator by email stating why and what you expect them to do to put it right in the comments box below.

Not Approved

Supervisors Signature

### Form Reference Numbers

Risk Assessment

SAF/MEME/6740

Method Statement

SAF/MEME/6740

COSHH Assessment

DSO Signature

### **This document set must be reviewed and re-approved at the following times:**

- 1) After the first occurrence of the activity described above (Review only)
- 2) After any change to the procedure or reagents used
- 3) After any incident resulting from this activity
- 4) At least annually from the date of approval

Next Review:

26 Mar 2021

Review comments