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, H34
Project / Activity / Task	DNA and RNA removal from decellularised samples
Supervisor Name	Sotiris Korossis

Version : 2.20

Loughborough University
Centre for Biological Engineering

Risk Assessment

Reference: SAF/MEME/6739

Location: H27, H34

Originator: Sotiria Toumpaniari

Project / Activity / Task: DNA and RNA removal from decellularised samples

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	N/A	Electrostatic phenomena	N/A	x
		Electrical test lables current		x
Category 2: Workplace				+
Slips/Trips/Falls on the level				x
Category 3: Hazardous and/or Harmful substances				+
Sensitising substances				x
exposure to Covid-19				x
Category 4: Work activity				+
Lone working out of hours				x
Category 5: Work organisation				+
N/A				x

Explain the risks associated with these hazards

People / Groups at risk: Operator only — x

Enter risk details here:-	Impact	Probability	Risk Score
Electrical shock from using equipment	Very Harmful	Unlikely	High
What are the control measures?	**Lowers Impact**	**Lowers Probability**	+
Equipment has bi-annual PAT testing but visual checking of cables should be done prior to using equipment	Significantly	Significantly	x

Residual Risk: Low

People / Groups at risk: Operator only — x

Enter risk details here:-	Impact	Probability	Risk Score
Sensitiser - Deoxyribonuclease I from bovine pancreas	Harmful	Unlikely	Medium
What are the control measures?	**Lowers Impact**	**Lowers Probability**	+

Process Risk Assessment Form (Continued)

Open tube containing powder in fume hood to add liquid	Significantly	Significantly	x
Laboratory users are trained on how to work with chemicals safely including dealing with spills.	Significantly	Significantly	x
Laboratory users will wear appropriate PPE as identified in the risk assessment.	Significantly	Significantly	x

Residual Risk: Low

People / Groups at risk: Operator only — x

Enter risk details here:-	Impact	Probability	Risk Score
Lone working	Harmful	Highly Unlikely	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 as this is a category 1 lab. Ensure you have a mobile phone at all times.	None	Moderately	x

Residual Risk: Low

People / Groups at risk: Operator and people in proximity — x

Enter risk details here:-	Impact	Probability	Risk Score
Slips trips and falls	Slightly Harmful	Highly Unlikely	

What are the control measures?	Lowers Impact	Lowers Probability	+
Ensure that the work area is kept clear and tidy, no obstacles on the floor and any spillages will be dealt with immediately to CBE SOP	None	None	x

Residual Risk:

People / Groups at risk: Everyone in the room — x

Enter risk details here:-	Impact	Probability	Risk Score
Exposure to Covid-19	Very Harmful	Unlikely	High

What are the control measures?	Lowers Impact	Lowers Probability	+
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	x

Residual Risk: Low

+ Add another Risk

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	0	0	0	0	0	0
Research Staff (PDRA)	1	1	0	0	0	0	2
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
Total	1	4	2	0	0	0	7

With these controls in place, the risk is:

The activity is LOW RISK - and is effectively controlled

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Centre for Biological Engineering

Safety Method Statement

Reference: SAF/MEME/6739

Location: H27, H34

Originator: Sotiria Toumpaniari

Project / Activity / Task: DNA and RNA removal from decellularised samples

What equipment will be used in this activity?	+
Fume hood	x
Incubator	x
Pipette	x
Pipette tips	x
Duran bottles	x
Pipette gun	x
Stripettes	x
Biological safety cabinet	x
Square plastic bottle	x

What training must be completed to do this activity?	+
Chemical	x

What chemicals are being used? (These must be included in the COSHH Form)	+
Magnesium chloride (1M)	x
Ribonuclease A from bovine pancreas	x
Deoxyribonuclease I from bovine pancreas	x

Spill and accident procedures.	+
Using an absorbent material collect solution and pour it in the waste bottle for the corresponding solution.	x

Procedure in the event of an emergency. (How to leave the process in a safe condition in such an event)	+
Dispose contaminated gloves. Leave note with a name of the operator and sate mentioning not to move anything from the area.	x

References.	+
https://www.sigmaaldrich.com/catalog/product/sigma/dn25?lang=en&region=GB	x
https://www.sigmaaldrich.com/catalog/product/sigma/r4875?lang=en&region=GB&cm_sp=Insite-_-caSrpResults_srpRecs_srpModel_r4875-_-srpRecs3-1	x
https://www.fishersci.co.uk/shop/products/ambion-mgcl-sub-2-sub-1m/10418464#?keyword=magnesium%20chloride	x

Detailed sequential description of the process

Process step	Precautionary measures and comments	+
Prepare DNase I and RNase A into stock solutions using MgCl2 1M.	Prepare solutions in fume hood in H34.	x
Dilute MgCl2 1M to 0.1M using ultrapure water.	Work in biological safety cabinet.	x

Safety Method Statement (Continued)

Process step	Precautionary measures and comments	+
Add required quantity of RNase and DNase to MgCl2 0.1M solution.	Use pipettes for this step.	x
Add prepared solution in decellurised tissues for 3h at 37degrees C.	Keep containers well sealed.	x

Loughborough University
Centre for Biological Engineering

COSHH Form

Reference: SAF/meme/968

Location: H27, H34

Originator: Sotiria Toumpaniari

Project / Activity / Task: DNA and RNA removal from decellularised samples

CHEMICAL NAME

Deoxyribonuclease I from bovine pancreas

CAS No. 9003-98-9

W.E.L. (Itel / stel)

Hazard Rating: High

OVERALL RISK: Low

Amount used		Period of use (hrs)	The process is:	Physical State		Exposure Potential
100	ml	1	Semi Closed	Non-Volatile Liquid	☐ Eyes ☐ Skin ☑ Inhaled ☐ Ingested	Low

This chemical has a high health risk associated with it.

Hazard Statement and Description	Precaution Statement and Description
H334 May cause allergy or asthma symptoms or breathing difficulties i	P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
	P284 Wear respiratory protection.
	P301 + P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unw
	P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position com
	P501 Dispose of contents/container to Gas Pod 1

Justify the use of this chemical:

How will the precautions listed above be implemented?

Work in a fume hood or biological safety cabinet. Wear appropriate PPE.

Special Storage and Containment Measures	Disposal Method
Keep container tightly at -20°C.	Collect in wast bottle for DNase I and when full dispose it at Gas POd 1.

How will spillages be dealt with?

Please note: any material used to clean up a spill of hazardous material must also be disposed of as hazardous material.
Click here to see spill procedures

Absorbent cloth / tissue

+ Add another chemical

Statement of work (Process to be undertaken)

After sample decellularisation, use DNase I and RNase A in MgCl2 solution to remove remnants of DNA and RNA.

Show image

Personal protection requirements not covered in the precaution statements above.

Always wear appropriate clothing (long trousers and skirts), closed shoes.

Sources of information and references

9003-98-9
https://www.sigmaaldrich.com/catalog/product/sigma/r4875?lang=en&region=GB&cm_sp=Insite-_-caSrpResults_srpRecs_srpModel_r4875-_-srpRecs3-1
https://www.fishersci.co.uk/shop/products/ambion-mgcl-sub-2-sub-1m/10418464#?keyword=magnesium%20chloride

Reference to **existing approved** Risk Assessment

COSHH Form (Continued)

With the current controls, the risk of using these chemicals is: Low

Supervisor to check that the process involving the safe use of these chemicals has been satisfactorily evaluated

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: Professor Sotiris Korossis — Digitally signed by Professor Sotiris Korossis Date: 2021.01.15 15:14:49 Z

Form Reference Numbers

Risk Assessment	Method Statement	COSHH Assessment
SAF/MEME/6739	SAF/MEME/6739	SAF/meme/968

DSO Signature: Keven G Smith — Digitally signed by Keven G Smith Date: 2021.03.26 14:30:50 Z

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 2022

Review comments