

Insert BA Categorisation (Hazard Group 1 or 2/ or GMO Class 1):
HG1



Health & Safety Unit Use Only	
Ref No:	
Department Use Only	
Ref No:	CBE/BRA/098

## RISK ASSESSMENT OF WORK WITH BIOLOGICAL AGENTS

Please note the following before completing this form:

- University Health and Safety Policy requires that risk assessment of all work with biological agents (BAs) must be carried out in advance of work commencing. A key requirement of The Control of Substances Hazardous to Health Regulations (COSHH) is to assess the risks associated with any work activity involving the use of biological materials may contain biological agents.
- YOU SHOULD COMPLETE ALL OF PART A, THE APPROPRIATE SECTIONS OF PART B, AND ALL OF PART C. WHERE HAZARD GROUP 2 BIOLOGICAL MATERIAL IS INTENDED TO BE USED THE RISK ASSESSMENT MUST BE REVIEWED BY THE DEPT/SCHOOL BIOLOGICAL SAFETY ADVISOR AND EXPLICIT APPROVAL IS ALSO REQUIRED FROM THE UNIVERSITY BIOLOGICAL SAFETY OFFICER. THIS FORM SHOULD BE SUBMITTED TO THE HEALTH, SAFETY & ENVIRONMENT UNIT FOR REVIEW VIA YOUR DEPARTMENTAL BIOLOGICAL SAFETY ADVISOR.
- It is the responsibility of the Principal Investigator/Supervisor to ensure compliance to these requirements and that this risk assessment remains valid.
- This risk assessment form **IS NOT** for assessing the risks associated with **Genetically Modified Organism activities**.

Date Submitted:	03/02/2015	Date Approved:	03/02/2015
Version Number:	1	Supersedes (insert version number if applicable)	N/A

**PART A:** Please provide the following general information:

<b>School/Department</b>			
Centre of Biological Engineering			
<b>Title of Project</b>			
Extraction of MiRNA from healthy blood			
Project Reference Number:			
<b>Person responsible for this work (Principle Investigator)</b>			
Name:	Dr Alexandra Stolzing	Position:	Senior Lecturer
Department:	Mechanical and Manufacturing Engineering	University School:	Wolfson School
<b>Person conducting this assessment</b>			
Name:	Samantha Swarbrick	Position:	PhD Student
Department:	CBE	Date Risk Assessment Undertaken:	02/02/15
Proposed Project Start Date:	16/02/15	Proposed Project End Date:	01/10/17

**Review History:** required at least once a year or immediately following any significant change to the project. Significant revisions must be detailed on a revision form. The person responsible must ensure that this RA remains valid.

	Review 1	Review 2	Review 3	Review 4	Review 5
Due Date					
Date Conducted					



## A1 PROJECT SUMMARY

### A1.1 Scientific Goals of the Project.

*This provides a useful background for the reviewer and reader. It need only be brief and should provide an overview of the scientific goals.*

Currently the diagnosis of Alzheimer's starts by visiting a GP who has a conversation with the patient and close family and friends to assess their mental state, the GP will then conduct various tests to confirm symptoms cannot be explained by another disorder. Once other conditions have been ruled out the patient is referred to a specialist and various brain scans conducted. The brain scans are expensive and sometimes cannot confirm a diagnosis in the early stages of the disease. Therefore there is current need for a simple, quick and low cost test for the early diagnosis of Alzheimer's.

In order for early diagnosis to be possible there needs to be a viable biomarker to test for, therefore the first aim of the project is to assess the viability of using miRNA in blood as an Alzheimer's biomarker. Then try and quantify miRNA using the anharmonic detection technique. Then the comparison of ADT to the current gold standard for miRNA detection which uses PCR.

### A1.2 Description of the Experimental Procedures

*Describe laboratory procedures to be used and highlight any non-standard laboratory operations. This may need cross reference to supporting documentation i.e. protocols.*

The experiment is an extraction of RNA/miRNA from human blood which has been immersed in Trizol. CBE researchers will get blood immersed in Trizol from SSEHS laboratories.

RNA and miRNA will be extracted using chloroform and isopropanol then the isolated RNA/miRNA will be quantified by qRT-PCR.

The chemicals will be COSHH assessed elsewhere.

**PART B:** Please provide information in one or more of the following sections, as appropriate. Only sections which you complete should be submitted:

*Section 1: micro-organisms (prions, viruses, bacteria, fungi, parasites in ACDP category 2 and pathogens controlled by the Department for the Environment, Food and Rural Affairs).  
[Work with ACDP category 3 and 4 pathogens is not currently permitted in the University.]*

*Section 2: cell cultures, tissues, blood, body fluids or excreta*

*Section 3: plants and plant material*

*Section 4: animals and animal tissues*

## SECTION 2: CELL CULTURES, TISSUES, BLOOD, BODY FLUIDS OR EXCRETA



### B2.1 HAZARD & RISK IDENTIFICATION : NATURE OF CELLS, TISSUES OR BODY FLUIDS

*This information gives an indication of the **potential** harm that the biological material may cause*

#### B2.1.1 List all cells or tissues to be used. For cells indicate if primary, continuous or finite.

Indicate in the adjacent box if Not Relevant (N/R)			N/R
Cell or tissue type and ID	Organ Source	Species	From where will it be obtained?

#### B2.1.2 List all blood, body fluids or excreta to be used

Indicate in the adjacent box if Not Relevant (N/R)		Yes
Material type	Species	From where will it be obtained?
Healthy Human Blood	Human	School of Sports Exercise and Health Science Containment Level 2 laboratories

#### B2.1.3 Has any material listed in section B2.1.1 been genetically modified in any way?

Indicate in the adjacent box as No, Yes or Not Relevant (N/R)	No
If Yes, complete Genetically Modified Organisms (GMO) Risk Assessment Form	

#### B2.1.4 Will material be screened for infectious agents? (if from a cell culture collection answer B2.1.6 instead)

Indicate in the adjacent box as: Yes, No or Not Relevant (N/R)	No
If Yes, provide details of the types of screening and agents screened for:	

#### B2.1.5 Will any clinical history (if relevant) be provided with this material?

Indicate in the adjacent box as: Yes, No or Not Relevant (N/R)	N/R The blood is immersed in trizol so the clinical history is not relevant.
If yes give details:	
If yes, will a policy of rejection of samples from diseased patients be adopted? Explain	
If yes, how will the information be disseminated in the course of the project?	
If yes, will this information be anonymised?	

**B2.1.6 If obtained from a cell culture collection, is safety information provided?**

Indicate in the adjacent box as: Yes, No or Not Relevant (N/R)	N/R
If Yes, summarise here:	

**B2.1.7 Has any of the material listed in section B2.1.1 been identified in the list of cross-contaminated or misidentified cell lines, available on HPA website**

([http://www.hpacultures.org.uk/media/E50/3B/Cell\\_Line\\_Cross\\_Contaminations\\_v6\\_0.pdf](http://www.hpacultures.org.uk/media/E50/3B/Cell_Line_Cross_Contaminations_v6_0.pdf))

Indicate in the adjacent box as No, Yes or Not Relevant (N/R)	N/R
If Yes, provide details of the route of provenance back to the originator of the cell line, together with a Certificate of Analysis; identifying the methods used to qualify the cell type.	

**B2.2 RISK TO HUMANS**

**B2.2.1 What is the likelihood of infection of this material? Indicate as None, Low Risk, Medium Risk, High Risk, Known Infected\***

Cell type and ID	Risk Category	Justification for Selection
Healthy Human Blood	None	All biological material non-viable – Immersed in Trizol
<i>If none proceed to section B2.2.4</i>		

*\*see The Managing the risks in laboratories and healthcare premises – available at <http://www.hse.gov.uk/biosafety/biologagents.pdf>*

**B2.2.2 If low, medium or high risk (section B2.2.1), name and classify the Biological Agents this material could be infected with. List the biological agents and indicate the ACDP hazard group classification\***

Name of Agent	Classification

*\*see The Approved List of Biological Agents – available on the Health & Safety website or <http://www.hse.gov.uk/pubns/misc208.pdf>.*

**B2.2.3 Describe the route(s) of infection (in humans) for these adventitious agents (place a 'X' in the relevant box)**

Percutaneous	Mucocutaneous	Inhalation	Ingestion	N/R
Details:				

**B2.2.4 Are there any other biological hazards (other than adventitious infectious risk) associated with the materials e.g. aggressive tumourigenic cell lines**

Indicate in the adjacent box as: Yes, No or Not Relevant (N/R)	No
If Yes, describe:	

**B2.3 HUMANS AT INCREASED RISK OF INFECTION**

**B2.3.1 Do any of the agents listed in section 2.1 present an overt risk to humans at increased risk (including immunocompromised workers, pregnant workers, breast feeding mothers)?**

Indicate in the adjacent box as: Yes, No or Not Relevant (N/R)	N/R
If yes, Occupational Health must be consulted:	

**B2.4. PROPAGATION OR CONCENTRATION OF ADVENTITIOUS AGENTS**

**B2.4.1 Will any culturing of this material take place?**

Indicate in the adjacent box as: Yes, No or Not Relevant (N/R)	No
If yes, identify the cells and the conditions these will grow:	

**B2.4.2 If culturing, will CD4+ cells be present. Describe what cells and for how long these cultures will be allowed to grow**

Indicate in the adjacent box as: Yes, No or Not Relevant (N/R)	N/R
If yes, explain:	

**B2.4.3 If culturing, what is the maximum volume of culture grown?**

Indicate in the adjacent box if Not Relevant (N/R)	N/R
Per Flask	Per experiment

**B2.4.4 Will the cells be manipulated in any way that could result in a concentration of any adventitious biological agent present?**

Indicate in the adjacent box as: Yes, No or Not Relevant (N/R)	N/R
If yes, explain:	

**B2.5 WORKING WITH MATERIAL DONATED BY YOURSELF OR COLLEAGUES:**  
Workers **MUST NEVER** culture, deliberately transform or modify their own cells or cells from their co-workers or workers otherwise associated with the experimental work. *NOTE: This presents a particular hazard since any self-inoculation injury could have potentially serious consequences as cells would essentially circumvent the normal protection of the immune system.*

**B2.5.1 Will any cells be donated by persons working in or has access to the lab?**

Indicate in the adjacent box as: Yes, No or Not Relevant (N/R)	No
If yes, explain what precautions are to be taken to prevent that person being exposed to the cells:	
If yes, where will this material be collected:	
If yes, provide justification for not using a safer source:	

If yes, how will confidentiality be assured:

If yes, has Ethics Committee approval been obtained:

## B2.6 ENVIRONMENTAL CONSIDERATIONS:

### B2.6.1 Are any of the agents capable of causing disease or other harm in animals, fish or plants?

Indicate in the adjacent box as: Yes, No or Not Relevant (N/R)

Yes

If yes, describe:

Chemicals used in the extraction will cause damage to aquatic organisms. For example Trizol and Sodium Dodecyl sulphate. All chemicals have been assessed through COSHH which includes the method for disposal.

### B2.6.2 Will there be any other environmental risks?

Indicate in the adjacent box as: Yes, No or Not Relevant (N/R)

No

If yes, describe:

## B2.7 OTHER HAZARDS

**B2.7.1 Are there any other hazards associated with this work?** For example, hazardous chemicals (especially carcinogens, mutagens, substances toxic to reproduction, cytotoxins), cryogenic gases, ionising radiation.

Indicate in the adjacent box as: Yes, No or Not Relevant (N/R)

Yes

If yes, identify these:

Trizol, Chloroform, ethanol, isopropanol, IMS and Liquid nitrogen

If yes, have these been risk assessed and any necessary approval obtained?

All relevant COSHH forms completed

**B2.7.2 Are there any conditions associated with the hazards described in B2.7.1 that require special attention in Section C of this risk assessment?** For example, material incompatibilities with disinfectants such as Virkon or hazardous product decomposition associated with high temperatures (ie autoclaving).

Indicate in the adjacent box as: Yes, No or Not Relevant (N/R)

Yes

If yes, provide details and ensure that appropriate control measures are addressed in Section C:

Hazardous chemicals used are incompatible with oxidising agents. Chemicals such as Trizol, Chloroform and sodium dodecyl sulphate.

## SECTION 4: ANIMALS AND ANIMAL TISSUES

### B4.1 HAZARD AND RISK IDENTIFICATION: NATURE OF ANIMALS OR TISSUE

This information gives an indication of the **potential** harm that the biological material may cause

#### B4.1.1 List all animals or animal tissues to be used

Species	Sex	Source	Anatomical Site	Origin or geographical source
Human	Either	Sports Science	Peripheral Blood	Loughborough University Sports Science

#### B4.1.2 Is the animal or tissue/body fluid to be worked with infected or to be infected?

Indicate in the adjacent box as No, Yes or Not Relevant (N/R)	No
If Yes, complete Section 1 of this form	

#### B4.1.3 Is a carcinogen, drug or other substance to be administered to the animal(s) or present in the tissue?

Indicate in the adjacent box as No, Yes or Not Relevant (N/R)	No
If Yes, complete the appropriate Chemical COSHH Assessment	

#### B4.1.4 Have the investigators that will be performing the work on animals obtained the appropriate Home Office Licence?

Indicate in the adjacent box as No, Yes or Not Relevant (N/R)	N/R
If No, consult the H&S Office.	

#### B4.1.5 Have Standard Operating Procedures (SOPs) for the proposed work been approved?

Indicate in the adjacent box as No, Yes or Not Relevant (N/R)	N/R
If No, consult the H&S Office. If Yes attach the signed approval.	

### B4.2 RISK TO HUMANS

#### B4.2.1 The disease(s) caused to humans

Describe the type and severity of effects or disease(s) on human health (including infection, allergy, bites and scratches)

Name of animal/animal tissue	Type	Severity



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**B4.2.2 What is the likelihood of infection of this material? INDICATE as None, Low Risk, Medium Risk, High Risk, Known Infected**

Name of agent	Risk Category	Justification for Selection
<i>If none proceed to section B4.3</i>		

**B4.2.3 Describe the routes of that the effects described in section B4.2.1 are transmitted (place a 'X' in the relevant box)**

Percutaneous	Mucocutaneous	Inhalation	Ingestion	N/R
Details:				

### B4.3 HUMANS AT INCREASED RISK OF INFECTION

**B4.3.1 Do any of the agents listed in section B4.1 present an overt risk to humans at increased risk (including immunocompromised workers, pregnant workers, breast feeding mothers, workers repeatedly handling or multiply dosing animals)?**

Indicate in the adjacent box as No, Yes or Not Relevant (N/R)	N/R
If yes, Occupational Health must be consulted:	

### B4.4. PROPAGATION OR CONCENTRATION OF ADVENTITIOUS AGENTS

**B4.4.1 Will any culturing of this material take place?**

Indicate in the adjacent box as No, Yes or Not Relevant (N/R)	No
If yes, complete Section 2 of this form:	

**B4.4.2 How many animals will be used?**

Indicate in the adjacent box if Not Relevant (N/R)	N/R

### B4.5 ENVIRONMENTAL CONSIDERATIONS: Risk to other animals

**B4.5.1 Will there be any risk other animals?**

Indicate in the adjacent box as No, Yes or Not Relevant (N/R)	No
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If yes, describe:

**B4.5.2 Will there be any other environmental risks?**

Indicate in the adjacent box as No, Yes or Not Relevant (N/R)	No
If yes, describe:	

## PART C: CONTROL MEASURES

### C1. CONTROL MEASURES

The risk of exposure must be prevented or adequately controlled to minimise the chance of harm arising. COSHH Regulations require minimum containment measures for laboratories handling organisms from the different ACDP hazard groups (<http://www.hse.gov.uk/pubns/misc208.pdf>)

The hazard group number typically indicates the level of containment (includes physical measures & working practices) that must be used for its handling).

#### C1.1 Preventing Exposure

##### C1.1.1 Substitution with a Safer Alternative

*Is substitution with a safer alternative practical, by for example, replacement of a clinical strain or pathogen with one that is lab adapted? Provide reasons for your answer:*

*There is no alternative for human blood.*

##### C1.1.2 Isolation/Segregation

*(i) Is/Are the laboratory(s) to be used for this work to be shared with other workers not directly involved in this activity?*

Indicate in the adjacent box as No, Yes or Not Relevant (N/R)

Yes

If yes, provide details:

Work will be conducted in the CBE laboratory which is a multiuser facility with shared equipment. After use each piece of equipment will be cleaned and decontaminated according to SOP guidelines so cross contamination is minimal.

*(ii) Is access to the laboratory(s) to be used for this work restricted?*

Indicate in the adjacent box as No, Yes or Not Relevant (N/R)

Yes

If yes, provide details:

**Access to CBE laboratories is restricted to authorised users only. All authorised users have been trained in working in a CL2 laboratory; documented training files for all authorised users are available in CBE offices**

#### C1.2 Controlling Exposure

**C1.2.1 Are sharps (needles, blades, scissors, forceps, glass or capillary tubes) to be used at any stage during this activity?**

Indicate in the adjacent box as No, Yes or Not Relevant (N/R)

Yes

If yes, list the sharps:

Pipette tips

If yes, justify there use – is there an alternative?

pipette tips are used for accurate volumes, there is no alternative.

If yes, describe there use and disposal:

Disposed of in cytotoxic sharps containers as will be contaminated with hazardous chemicals.

If yes, describe any additional precautions employed to reduce risk:  
 All equipment will be handled with care and accident procedures are displayed on posters

**C1.2.2 Containment and Ventilation**

(i) Is the use of BSC required for the protection of the worker i.e. do the work procedures generate aerosols or splashes that pose a risk to workers?  
 Indicate in the adjacent box as No, Yes or Not Relevant (N/R)  No

If yes, specify the type(s) and when they will be used:

(ii) Are there any requirements for room ventilation e.g. negative pressure, temperature control?  
 Indicate in the adjacent box as No, Yes or Not Relevant (N/R)  No

If yes, specify:

**C1.2.3 Transport and Storage within the laboratory**

How and where are materials to be stored?  
 All chemicals will be stored in the CBE laboratories in a cool dry place. The blood will be stored at either -4°C, -20°C, -80°C or in liquid nitrogen in the CBE laboratories. Relevant SOP's will be followed:

SOP016- Use and maintenance on fridges and freezers.  
 SOP013- Use and maintenance of liquid nitrogen stores

How will this material be transported within the laboratory e.g. between BSC and incubator? Detail the containment measures which will be used to prevent or contain accidental splashes or spills.  
 The blood will be placed in a closed vial, the vial will be placed in a rack in a box to be transported. Appropriate SOP's will be followed (SOP005) and if a spill occurs the appropriate procedure will be followed as outlined in C1.3.1.

**C1.2.4 Local transport out of the laboratory**

How will this material be transported on-site (e.g. research material between labs on campus or movement of waste containing viable agents e.g. to a remote autoclave)? Detail the containment measures which will be used to prevent or contain accidental splashes or spills

SOP005 will be followed when transporting goods. All disposal procedures will be via cytotoxic waste

**C1.2.5 Shipment of Biological Material**

Will this material be shipped elsewhere in the UK or abroad?  
 Indicate in the adjacent box as No, Yes or Not Relevant (N/R)  No

If yes, give details to support compliance to the relevant regulation (e.g. category of material, correct packaging instruction):

Description of material to be shipped (indicate in available boxes). Is this:

Category A	<input type="checkbox"/>	UN2814	<input type="checkbox"/>	UN2900	<input type="checkbox"/>	Packaging instruction 602 or 620 must be followed
Or?						
Category B	<input type="checkbox"/>	UN3373	<input type="checkbox"/>		<input type="checkbox"/>	Packaging instruction 650 must be followed
Or?						
Non-hazardous	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	Should be packaged to protect sample

### C1.2.6 Receipt of material

*If material will be received from other sites or organisations, what precautions are being taken to ensure that the material is shipped correctly?*

Material will be brought in secondary containment from the SSEHS laboratories.

### C1.2.7 Centrifugation

*(i) If material is to be centrifuged will sealed buckets and rotors be used?*

Indicate in the adjacent box as No, Yes or Not Relevant (N/R)

Yes

*(ii) Where will these rotors/buckets be opened?*

*Will be opened in the Laboratory unless a spill has occurred. In the event of a spill it will be opened the fume cupboard.*

*(iii) Describe the procedures in place to deal with leaks and spillages in the centrifuge*

*If a spill occurs SOP038 and 039 will be followed.*

Labelled Biological Spill kits are located in each laboratory within the CBE Laboratory Unit. Signs are posted throughout the Laboratory Unit to enable workers to locate the nearest biological (and chemical) spill kits. Posters are also displayed in each laboratory where a centrifuge is located to advise on spill response and reporting procedures.

### C1.2.8 Incubators

*If incubators are to be used, what type of incubator (e.g. shaking, static) is used and describe procedures to prevent and contain spillages.*

Incubators will not be used.

### C1.2.9 Disinfection

Specify the type and concentration of disinfectants to be used:

Virkon will not be used as incompatible with hazardous chemicals used. Biological material is immersed in Trizol therefore non-viable. Before and after use of the fume cupboard it will be wiped with 70% IMS

Have these disinfectants been validated for use with the recipient biological material?

Indicate in the adjacent box as No, Yes or Not Relevant (N/R)

If yes, describe the procedure:

70% IMS has been validated as a disinfectant according to SOP004, Virkon must not be used as incompatible with the hazardous chemicals.

### C1.2.10 Personal Protective Equipment (PPE)

*(i) What type of lab coats will be worn and where will they be stored?*

**Side fastening Howie type lab coats will be worn at all times within the CBE facility. They are stored outside the laboratory in a dedicated change area. Guidance on the proper use of PPE will be taken from CBE SOP307 "Use of Personal Protective Equipment"**

(ii) What type of gloves will be worn and where will they be stored?  
**Cryogenic Gloves, stored in the CBE autoclave room are worn at all times when using liquid nitrogen storage containers as directed by SOP013 "Use and Maintenance of Liquid Nitrogen Stores"**  
**Disposable latex powder free gloves for general use will be worn at all times when in the CBE facility, as directed by SOP037 "Use of Personal Protective Equipment"**

(iii) Describe any other PPE to be used:  
**Laboratory safety glasses will be worn as directed by relevant SOPs when working within the CBE.**

**C1.2.11 Hygiene Measures**

Describe the hygiene facilities available and where they are located  
**Designated eye wash stations and hand washing facilities are available in the change room of each laboratory; other hand basins are situated directly inside the analytical laboratory and in the main change area as entering and exiting the facility**

**C1.2.12 Vaccination**

Are effective vaccines available against any of the agents listed in Section 1, 2, 3, or 4 of Part B?  
 Indicate in the adjacent box as No, Yes or Not Relevant (N/R) N/R

If yes, describe:

**C1.2.13 Waste Treatment before Disposal**

How must waste to be treated before disposal and how has it been validated as being effective?

Type of Waste	Treatment before disposal	Validation of this treatment
Liquid waste	Disposed of via chemical waste, must not be autoclaved or disinfected using Virkon	N/R
Solid waste	Disposed of via cytotoxic waste due to hazardous chemicals	N/R

**C1.2.14 Autoclave sterilisation**

If waste is treated by autoclave sterilisation then this section must be completed. If this section is not relevant then hatch the box

Type of Waste	Composition of waste	Autoclave cycle (temp, cycle time)	Treatment monitor
Liquid waste	N/R	N/R	N/R
Solid waste	N/R	N/R	N/R

  

Location of autoclave	Servicing details	Location of back-up autoclave	Designated area for storage of unsterilised waste
N/R	N/R	N/R	N/R

**C1.2.15 Liquid Waste Disposal**

How will liquid waste be disposed of?

To the drain? No, chemicals hazardous to aquatic organisms
As solid waste? No
Other? Liquid waste is mainly composed of hazardous chemicals and therefore will be disposed of in Winchester bottles making sure not to mix incompatible chemicals. Bottles will be appropriately labelled with the chemical, volume and date of disposal, then sent to the chemistry department to be disposed of appropriately.

### C1.2.16 Solid Waste Disposal

Describe the waste category and disposal route. (For guidance refer to <http://www.environment-agency.gov.uk>)

Colour Code	Categorisation	Hatch relevant box(es)	Disposal Method
Yellow	Sharps (not contaminated with cytotoxic/cytostatic material)		Yellow Sharps bin>autoclave sterilisation if known or potentially infected >clinical waste disposal (incineration)
Purple/Yellow Special case, contact DSO	Sharps (contaminated with cytotoxic/cytostatic material)	x	Purple/Yellow lidded Sharps bin>clinical waste disposal (incineration @ 1000C)
Yellow	Human body parts, organs, including blood bags and blood preserves and excreta (unless identified as medium or high risk or known infected in Section 2.2.1 of this RA in which case they must be pre-treated before disposal)		Yellow rigid one way sealed tissue bins>clinical waste disposal (incineration)
Yellow	Animal body carcasses or recognisable parts ((unless identified as medium or high risk or known infected in Section 2.2.1 of this RA in which case they must be pre-treated before disposal		Yellow rigid one way sealed tissue bins > clinical waste disposal (incineration)
Special Case – Contact DSO	Potentially or known infected lab wastes (including sharps) of HG2, GM Class 2, DEFRA Cat 2 or higher, that have not been pre-treated before leaving the site.		This is not a route of preference and is subject to special requirements
Orange	Infected or potentially infected lab wastes that have been pre treated before leaving the site		Disinfection or sterilisation (as identified in C1.2.14) in the laboratory suite > orange clinical waste bags > clinical waste disposal (incineration)
Yellow	Infected or potentially infected animal or human body parts, organs or excreta that have been pre treated before leaving site		Disinfection or sterilisation (as identified in C1.2.14) in the laboratory suite > yellow one way sealed tissue bins > clinical waste disposal (incineration)

### C1.2.17 Work with Animals or Vectors (if none proceed to Section C1.2.18)

(i) Are animals or vectors to be infected with any of these biological agents?	
Indicate in the adjacent box as No, Yes or Not Relevant (N/R)	N/R

If yes, describe the procedure and describe where this aspect of the work will be conducted:	
(ii) Is shedding of infectious materials by the infected animals possible or expected?	
Indicate in the adjacent box as No, Yes or Not Relevant (N/R)	N/R
If yes, describe the routes of shedding, risk periods for such shedding and the additional precautions required to control exposure:	
(iii) Who will perform the inoculations of animals/vectors? What training have they received?	
Indicate in the adjacent box if Not Relevant (N/R)	N/R
Provide details of the training required:	

**C1.2.18 Bioreactor/Fermenters (if none proceed to Section C1.2.19)**

Will a bioreactor/fermenter be used to culture a biological agent?	
Indicate in the adjacent box as No, Yes or Not Relevant (N/R)	No
If yes, describe the size, and type of the bioreactor/fermenter.	
(ii) Are any supplementary containment measures required, for example, the use of a BSC or spill tray.	
Indicate in the adjacent box as No, Yes or Not Relevant (N/R)	N/R
If yes, describe:	

**C1.2.19 Other Control Measures Required?**

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**C1.3 Emergency Procedures**

**C1.3.1 Describe the procedures in place for dealing with spillages (specify disinfectants and any special containment for large volumes)**

Within the BSC:
A BSC will not be used
Within the laboratory but outside the control measure e.g. BSC, spill tray
In the event of a spill SOP039 will be followed
Outside the laboratory e.g. during transport
The procedures outlined in SOP039 will be followed



Describe the procedures in place for an accidental exposure (if necessary describe different procedures for different types of exposure e.g. eye splash or percutaneous inoculation)

All procedures outlined in the relevant COSHH forms

## C2 ASSIGNMENT OF CONTAINMENT LEVEL

The laboratory Containment Level is directly related to each of the 4 Hazard Groups; organisms categorised as HG1 (lowest hazard rating) should normally be handled in CL1 facilities (minimum level of containment), and likewise up to HG4 (highest hazard rating) in CL4 facilities (maximum level of containment). Where the identity or presence of a biological agent is not known the following rules apply: a) where uncertainty exists over the presence of pathogenic biological agent – minimum of CL2; b) where the presence of a pathogenic biological agent is known or suspected – minimum of Containment Level appropriate to the agent, where the assessment is inconclusive but where the activity might involve serious risk – minimum CL3

**C2.1. What containment level is required for this work?** (see COSHH Schedule 3, Part II for a list of criteria)

CBE is a containment level 2 laboratory which is more than sufficient for a hazard group 1 material

**C2.2. Describe extra controls or derogation from certain controls**

There are chemicals which are incompatible with Virkon so therefore should not be used when conducting this procedure. The disposal of those chemicals will be defined in the COSHH.

## C3 FACILITIES

**C3.1 Where will this work take place?**

Room(s)	Building	Campus	Person in Control of area
<i>CBE Laboratory</i>	<i>CBE</i>	<i>Holywell Park</i>	<i>Carolyn Kavanagh Kul Sikand Bob Temple</i>

## C4 PERSONNEL

**C4.1 Names of Personnel involved in the Project**

Surname	Initials	University ID	Position
<i>Stolzing</i>	<i>A</i>		<i>Senior Lecturer</i>
<i>Swarbrick</i>	<i>S</i>	<i>B310014</i>	<i>PhD Student</i>

**C4.2 Information, Instruction and Training**

*Describe the training that will be given to all those affected (directly or indirectly) by the work activity. Instruction should include the 'Local Rules' or 'Local Codes of Practice' which focus on the working instructions to be followed by all persons involved in the work activity to control or prevent exposure to hazardous biological agent(s). These should be written and readily available to all workers working at Containment Level 2. A formal record of training should be kept for all individuals working at Containment Level 2.*

Access to CBE laboratories is restricted to authorised users. In order to obtain authorised user status, operators must satisfy minimum training requirements set by CBE management and Health and Safety Committee. Basic training modules include a detailed review of the current Code of Practice (CoP), this document details specific aspects of class 2 working in relation to handling biological agents, waste management, training requirements of lab equipment and emergency procedures including spill responses.

All training is documented in a personal training file, which is held in the CBE office at all times. Prior to being granted access to CBE labs, each training file must be reviewed and signed off by both lab management and the departmental safety officer (DSO).

Once authorised access has been granted, it is the responsibility of the operator to identify specific training needs prior to the start of new projects. SOPs and risk assessments relevant to project equipment and/or procedures can be used as training aids. Training files are live documents and must be continually updated to record all training acquired.

**C4.3 Relevant Experience/Training:**

Surname	Experience/Training
<i>Swarbrick</i>	<i>See relevant training file</i>

**C4.4 Other people who may be at risk from the activity e.g. cleaners, maintenance workers or other workers in shared laboratory**

Details:  
 NONE: Cleaners and Maintenance workers are not authorised to enter the laboratory. All laboratory cleaning is undertaken by authorised personnel (i.e. CBE staff). Access for non-laboratory workers is subject to a local permit-to-work procedure. If access is needed for essential maintenance of equipment for example a clean down and decontamination of the laboratories will be performed. This will be documented with decontamination certificates and the maintenance worker fully supervised according to SOP004 "General Laboratory Housekeeping" and the local Code of Practice Two laboratory shut downs occur every year for a week for maintenance work to be done in the CBE Laboratory Unit. Prior to these shut down weeks a full deep clean decontamination will be performed in the all laboratory areas.

All other workers in the CBE Laboratory Unit are authorised personnel.

**C5 OCCUPATIONAL HEALTH**

### C5.1 Vaccination

Is an effective vaccination available for any of the pathogens associated with this work? Advice can be obtained from the Occupational Health Adviser (OHA) if required. All workers involved with handling unscreened blood, blood products and other tissues are recommended to have Hepatitis B immunization

Advice can be obtained from the Occupational Health Adviser (OHA) if required. All workers involved with handling unscreened blood, blood products and other tissues are recommended to have Hepatitis B immunization

### C5.2 Health Surveillance

Is health surveillance required? (Health surveillance is typically applied if working with a hazardous substance that: a) produces an identifiable disease or adverse health effect that can be related to exposure; b) there is a reasonable likelihood that the disease or effect may occur under the conditions of work, and c) there are valid techniques for detecting indications of the disease or effect).

N/R

## C6. NOTIFICATIONS: Human Tissue Act

### C6.1.1 Relevant material covered by the Human Tissue Act

Are any of the cells, tissues or fluids to be used covered by the Human Tissue Act?

Indicate in the adjacent box as No, Yes or Not Relevant (N/R)

No

### C6.1.2 Does This Work Have Ethical Approval? If Yes, Provide Details

Indicate in the adjacent box as No, Yes or Not Relevant (N/R)

N/R

Approval number:

Date obtained:

Ethics committee name:

### C6.1.3 Are other registrations/notifications required for this work? For example HSE notification under COSHH, Home Office notification under anti-terrorism, crime and security act etc

Indicate in the adjacent box as No, Yes or Not Relevant (N/R)

N/R

If Yes, give details:

## 7. LICENSING REQUIREMENTS FOR ANIMAL PRODUCTS

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### C7.1.1 Are there any licensing requirements for this work?

Indicate in the adjacent box as No, Yes or Not Relevant (N/R)	N/R
The regulations covering the import of animal products (including tissue cultures, tissues, body fluids or fractions thereof) are in a state of flux. Current procedures to be followed:	
<ul style="list-style-type: none"><li>• If you wish to import any animal products that you know are not infected with an animal pathogen, or have good reason to expect that they are not infected with an animal pathogen, from within or outside of the EC you must apply for a Research Sample Licence using the Defra form IAPPO1. Follow this link to download the form <a href="http://www.defra.gov.uk/corporate/docs/forms/ahealth/iapppo1.htm">http://www.defra.gov.uk/corporate/docs/forms/ahealth/iapppo1.htm</a></li><li>• If you wish to import such an animal product but it is known or suspected of being infected with an animal pathogen then you must use DEFRA form IM137. Follow this link to download the form <a href="http://www.defra.gov.uk/corporate/docs/forms/ahealth/inttrade/im137.htm">http://www.defra.gov.uk/corporate/docs/forms/ahealth/inttrade/im137.htm</a></li><li>• If you wish to import an animal pathogen listed under the Specified Animal Pathogens Order then you must use DEFRA form PATH1. Follow this link to download the form <a href="http://www.defra.gov.uk/corporate/docs/forms/ahealth/path1.htm">http://www.defra.gov.uk/corporate/docs/forms/ahealth/path1.htm</a></li></ul>	
In all cases the instructions for their submission is stated on the forms themselves.	
ALL APPLICATIONS SHOULD BE REVIEWED BY THE DEPARTMENTAL SAFETY OFFICER AND THE UNIVERSITY BIOLOGICAL SAFETY OFFICER BEFORE SUBMISSION.	

<b>8. DECLARATION</b>		
<i>The declaration must be signed <b>before</b> submitting this assessment to the Departmental Safety Officer and University Biological Safety Officer</i>		
I, the undersigned:		
<ul style="list-style-type: none"><li>• confirm that all information contained in this assessment is correct and up to date</li><li>• will ensure that <b>suitable and sufficient instruction, information and supervision</b> is provided for all individuals working on the activity</li><li>• will ensure that no work will be carried out until this <b>assessment has been completed and approved</b> and that all necessary control measures are in place</li><li>• that all information contained in this assessment must remain correct and up to date (the assessment should be <b>reviewed once a year</b> and whenever any <b>significant changes</b> to the work activity occur)</li><li>• will re-submit the assessment for approval if any significant changes occur</li></ul>		
<b>Name:</b>	<b>Signature:</b>	<b>Date:</b>

Person conducting assessment		
<b>S Swarbrick</b>		3/02/15
<b>Name(s):</b> All named persons involved in the project (add additional rows below, as required)	<b>Signature:</b>	<b>Date:</b>
<b>Name:</b> Principal Investigator/Supervisor/Line Manager	<b>Signature:</b>	<b>Date:</b>
A. Stolzeng		3.2.2015

### 9. APPROVAL

For work involving **Hazard Group 1** biological agents: Review and approval is required by authorised and designated members of CBE staff before the work begins

For work with **Hazard Group 2** biological agents: Explicit approval is required from the Departmental Biological Safety Advisor and the University Biological Safety Officer before work begins.

If the biological agent has been **Genetically Modified** this form, (approved by the relevant authority, as above) should be submitted with the GMO risk assessment to the Departmental Biological Safety Advisor and both forms forwarded to the LU GM Safety Committee for final approval.

Name: Authorised CBE Personnel (please indicate position)	Signature	Date
A. CHANDRA, RA.		3 Feb 2015
Name: Departmental Biological Safety Advisor	Signature	Date
Name: University Biological Safety Officer (or Deputy)	Signature	Date

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